ASPE ASSISTANT SECRETARY FOR PLANNING AND EVALUATION

OFFICE OF HEALTH POLICY

REPORT TO CONGRESS

Social Risk Factors and Performance in Medicare's Value-Based Purchasing Program

The Second of Two Reports Required by the Improving Medicare Post-Acute Care Transformation (IMPACT) Act of 2014

March 2020

U.S. Department of Health & Human Services

Office of the Assistant Secretary for Planning and Evaluation

Acknowledgements

Many people at ASPE contributed to this project, including Rachael Zuckerman, Lok Wong Samson, Wafa Tarazi, Susan Bogasky, Victoria Aysola, Scott Smith, Steven Sheingold, and Nancy De Lew.

ASPE would also like to gratefully acknowledge partners throughout the Department of Health and Human Services that provided invaluable ideas, feedback, and review throughout this project. ASPE also acknowledges programming support from Acumen, LLC.

Suggested Citation

Office of the Assistant Secretary for Planning and Evaluation, U.S. Department of Health & Human Services. Second Report to Congress on Social Risk Factors and Performance in Medicare's Value-Based Purchasing Program. 2020. https://aspe.hhs.gov/social-risk-factors-and-medicares-value-based-purchasing-programs

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Acronyms

ACAP	Association of Community Affiliated Plans
ACF	Administration for Children and Families
ACOs	Accountable Care Organizations
ACL	Administration for Community Living
ACS	American Community Survey
ACSC	Ambulatory care-sensitive condition
ADI	Area deprivation index
ADL	Activity of daily living
AHRQ	Agency for Healthcare Research and Quality
AMI	Acute myocardial infarction
APM	Alternative payment model
ASPE	Office of the Assistant Secretary for Planning and Evaluation
CABG	coronary artery bypass graft
CAHPS	Consumer Assessment of Healthcare Providers and Systems
CAI	Categorical Adjustment Index
CBSA	Core-Based Statistical Areas
CCO	Coordinated care organization
CCW	Chronic Condition Warehouse
CDC	Centers for Disease Control and Prevention
CDPS	Chronic Illness and Disability Payment System
CMMI	Center for Medicare & Medicaid Innovation
CMS	Centers for Medicare & Medicaid Services
COPD	Chronic obstructive pulmonary disease
CTO	Office of the Chief Technology Officer
DE	Dual eligible
DSH	Disproportional share hospital
D-SNP	Special Needs Plan for dually enrolled beneficiaries
E&M	Evaluation & management
eCQM	electronic clinical-quality measure
ED	Emergency department
EHR	Electronic health record
ESI	Employer-sponsored insurance
ESRD	End-stage renal disease
FFS	Fee-for-service
FHIR®	Fast Health Interoperability Resource
FORHP	Federal Office of Rural Health Policy
FIDE SNP	Fully Integrated Dual Eligible Special Needs Plan
FPL	Federal Poverty Level
FQHC	Federally Qualified Health Center

GDP	Gross domestic product
HACRP	Hospital-Acquired Conditions Reduction Program
HCC	Hierarchical condition category
HCPCS	Healthcare Common Procedure Coding System
HHA	Home health agency
HHS	U.S. Department of Health and Human Services
HHVBP	Home Health Value-Based Purchasing Program
HI-5	Health Impact in 5 Years
HIPAA	Health Insurance Portability and Accountability Act
HIQR	Hospital Inpatient Quality Reporting Program
HIV/AIDS	Human immunodeficiency virus/acquired immunodeficiency syndrome
HOS	Health Outcomes Survey
HRRP	Hospital Readmissions Reduction Program
HRS	Health and Retirement Study
HRSA	Health Resources and Services Administration
HSA	Hospital service area
HUD	U.S. Department of Housing and Urban Development
HVBP	Hospital Value-Based Purchasing Program
IADLs	Instrumental activities of daily living
ICD-9	International Classification of Diseases, Ninth Revision
ICD-10	International Classification of Diseases, Tenth Revision
ICU	Intensive care unit
IMPACT Act	Improving Medicare Post-Acute Care Transformation Act of 2014
InCK	Integrated Care for Kids Model
IRF	Inpatient rehabilitation facility
IT	Information technology
LIS	Low-income subsidy
LOINC	Logical Observation Identifiers Names and Codes
LTCH	Long-term care hospital
MA	Medicare Advantage
MBSF	Master Beneficiary Summary File
MCBS	Medicare Current Beneficiary Survey
MCC	Multiple chronic conditions
MDC	Major diagnostic conditions
MIPS	Merit-based Incentive Payment System
MOM	Maternal Opioid Misuse Model
MSA	Metropolitan statistical area
mSA	Micropolitan statistical area
MS-DRG	Medicare Severity-Diagnosis Related Group
MSPB	Medicare Spending per Beneficiary
MSSP	Medicare Shared Savings Program

Acronyms

NACHC	National Association of Community Health Centers
NASEM	National Academies of Science, Engineering, and Medicine
NHATS	National Health and Aging Trends Study
NHCS	National Hospital Care Survey
NQF	National Quality Forum
OCR	Office of Civil Rights
OECD	Organisation for Economic Cooperation and Development
OMB	Office of Management and Budget
OMH	Office of Minority Health
ONC	Office of the National Coordinator for Health Information Technology
OR	Odds ratio
PAC	Post-acute care
PACE	Programs of All-Inclusive Care for the Elderly
PCOR	Patient-centered outcomes research
PRAPARE	Protocol for Responding to and Assessing Patients’ Assets, Risks, and Experiences
PSH	Permanent Supportive Housing Program
QIN-QIO	Quality Innovation Network Quality Improvement Organizations
QIO	Quality improvement organization
QIP	Quality incentive program
RA	Risk adjustment
REACH	Racial and Ethnic Approaches to Community Health
RFI	Request for Information
RTI	Research Triangle Institute
RUCA	Rural-Urban Commuting Area
RUG	Resource Utilization Group
SDI	Social deprivation index
SEP	Socioeconomic position
SES	Socioeconomic status
SAMHSA	Substance Abuse and Mental Health Services Administration
SHR	Standardized hospitalization ratio
SIM	State innovation model
SIREN	Social Interventions, Research and Evaluation Network
SNAP	Supplemental Nutrition Assistance Program
SNF	Skilled nursing facility
SNF VBP	Skilled Nursing Facility Value-Based Purchasing Program
SNOMED CT	Systematized Nomenclature of Medicine—Clinical Terms
SNP	Special needs plan
SSA	Social Security Administration
SSI	Supplemental Security Income
SSN	Social Security Number
STRYVE	Striving to Reduce Youth Violence Everywhere

Acronyms

THA/TKA	Total hip/knee arthroplasty
TIN	Tax identification number
TPCC	Total per capita cost measure
TPS	Total performance score
USDA	U.S. Department of Agriculture
VA	Vascular access *or* U.S. Department of Veterans Affairs
VBP	Value-based purchasing
VM	Value Modifier program
WHO	World Health Organization

Executive Summary

Executive Summary

I. Introduction

In recent years, the U.S. Department of Health and Human Services has embraced value-based purchasing (VBP) as a strategy for the Medicare program to achieve greater value for the nation's health dollar, as measured by quality outcomes and cost of care. While definitions of VBP vary, the general policy objectives are to move away from fee-for-service payments, to pay for health care quality versus quantity of services provided, and to incentivize the provision of person-centered, coordinated care. Under these policies, providers[1] that participate in Medicare are held financially accountable for both the cost and quality of health care services. While strong incentives for achieving VBP objectives are critical, it is also important to apply such incentives fairly—that is, to recognize when these incentives place certain providers at a relative disadvantage. In this regard, there has been considerable discussion on whether VBP programs should account for differences in populations between providers and, in particular, whether programs should account for beneficiaries with social risk factors—people for whom factors such as income, housing, social support, transportation, and nutrition might adversely affect access to health services or desired health outcomes.[1-7] The ongoing transition to VBP has been accompanied by growing recognition that to achieve VBP's objectives, the nation's health care delivery system must draw upon social and community services to address social risk factors.[8,9] These services most often are provided by networks of non-profit community-based organizations that have long-standing, trusted relationships across the nation, in both rural and urban communities.

This Report will explore emerging trends among providers who are addressing social risk factors in part by developing linkages with social service and other community-based organizations.

Congress responded to the need to develop high-quality evidence to guide policy decisions about the role of social risk in VBP in part by calling for this Report. Section 2(d) of the Improving Medicare Post-Acute Care Transformation (IMPACT) Act of 2014 (P.L. 113-183) called for the Secretary of Health and Human Services (HHS), acting through the Office of the Assistant Secretary for Planning and Evaluation (ASPE), to conduct a study evaluating the effect of individuals' socioeconomic status (SES) on quality measures and measures of resource use under the Medicare program. The statute requires four components:

- "Study A,"[2] which focused on SES information currently available in Medicare data, and Medicaid eligibility and urban-versus-rural location.[3] Study A introduced the broader concept of social risk factors to replace SES and was submitted as a Report to Congress in December 2016.

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[1] Note that in this Report the term "providers" is used to indicate physicians, hospitals, dialysis facilities, nursing facilities, Medicare Advantage contracts, etc.

[2] The term "Study A" is based on the statutory mandate in section 2(d)(1)(A) of the Improving Medicare Post-Acute Care Transformation (IMPACT) Act of 2014.

[3] Improving Medicare Post-Acute Care Transformation (IMPACT) Act of 2014, Section 2(d)(1)(A)

- "Study B," which expands the analyses by using non-Medicare datasets to examine the impact of risk factors on quality resource use, and other measures, is the subject of this Report.[4] Study B was due to the Congress in October 2019.
- An examination of non-Medicare data sources to inform and contextualize Studies A and B focusing on data availability and use.[5] The National Academies of Science, Engineering, and Medicine (NASEM) prepared a set of five reports commissioned by ASPE and released in 2017 on this topic. This Report builds on and extends the NASEM data work.
- Recommendations by the Secretary on 1) how CMS should obtain access to the necessary data on SES (if the data is not already being collected) and how to address barriers to access to the data, and 2) how CMS should account for SES in quality, resource use, and other measures and in payment adjustments based on those measures, if Studies A and B find a relationship between SES and quality and resource use measures.

This Report presents the results of Study B and builds on the framework and considerations introduced in Study A. This Report addresses three policy questions:

1. Should some or all of Medicare's value-based purchasing programs account for social risk by adjusting measures and/or payment based on those measures?
2. Should HHS routinely collect more extensive and detailed data on beneficiaries' social risk factors than is currently available?
3. How can HHS achieve better outcomes for all Medicare beneficiaries by facilitating the ability of providers and communities to address social risk factors and integrate health and social services?

The first two policy questions are guided by Congress' request for Study B. The third policy question furthers HHS's goal to improve health outcomes for all Medicare beneficiaries. This Report uses both Medicare and non-Medicare data sources to address the policy questions. In addition, this Report outlines policy options that could potentially address social risk factors, and quantifies the impact of these options on providers serving beneficiaries with social risk factors. It also expands on the data findings requested by the Congress in Study C. As required by statute, this Report provides evidence and recommendations related to the issue of accounting for social risk factors in Medicare's VBP programs specifically. However, since VBP programs are only one part of the larger goal of providing high-value, person-centered care, it also addresses the current state of efforts and future options for more comprehensively addressing and integrating social risk factors within the Medicare program and the broader health care system.

II. Main Findings

Study A laid out three strategies for accounting for social risk in Medicare's VBP programs to ensure that all Medicare beneficiaries receive the highest-quality health care services. The findings in this Report reinforce the need for such strategies. Proposed solutions that address only the measures or programs without considering the broader delivery system and policy context are unlikely to mitigate the full

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[4] Improving Medicare Post-Acute Care Transformation (IMPACT) Act of 2014, Section 2(d)(1)(B)

[5] Improving Medicare Post-Acute Care Transformation (IMPACT) Act of 2014, Section 2(d)(1)(C)

implications of the relationship between social risk factors and outcomes. VBP programs need to be leveraged to enhance access to and provision of high-quality care for beneficiaries with social risk factors.

The findings in this Report build on those of Study A, particularly the strategies for accounting for social risk in Medicare's VBP programs (Figure 1.1). The first strategy, "measure and report quality," deals with collecting and using social risk information. The second strategy, "set high, fair quality standards," refers to the use of social risk information in quality and resource use measures and in VBP programs. Finally, "reward and support better outcomes" addresses the need to address beneficiaries' social needs directly.

Figure 1.1. Strategies for Accounting for Social Risk in Medicare's Value-Based Purchasing Programs

Looking across the quantitative and qualitative analyses conducted for this Report, the following three main findings emerge.

A. FINDING 1: Beneficiary social risk information is not routinely or systematically collected across the health care system, and there is not always standardized terminology to capture beneficiary social risk information.

A prerequisite to measuring and reporting quality for beneficiaries with social risk factors is knowing beneficiaries' social needs. A consistent theme found throughout the qualitative research in this Report was the lack of available information on beneficiaries' social risk. Currently, when individual-level social risk information is collected, it may be recorded using one of the many screening tools available and documented in varying locations, including electronic health record (EHR) fields, free text notes, or as diagnoses. This lack of standardization in data collection and documentation makes it difficult to share data meaningfully between providers, payers, and social service organizations.

Despite these limitations, there is broad interest in having information on beneficiaries' social risk. All the EHR vendors included as case studies in this Report are incorporating social risk information into their tools in response to client demand. Additionally, submitters to ASPE's RFI (Request for Information) on provider and health plan approaches to improving care for Medicare beneficiaries with social risk factors discussed the need for standards on social risk data collection to support interoperability.

B. FINDING 2: After accounting for additional social and functional risk factors, dual-enrollment status remains a powerful predictor of poor outcomes on some quality and resource use measures in Medicare's VBP programs. Functional status is also a powerful predictor of poor outcomes on some measures but is not always included in measure risk adjustment.

Setting high, fair quality standards for all beneficiaries involves accurately accounting for differences between beneficiaries that may affect health outcomes. This Report evaluated additional individual-level social risk factors available in the Medicare Current Beneficiary Survey (MCBS): marital status, education, language, living alone, income, wealth, and private health insurance. It also included the area-level social risk factors of the social capital index and social deprivation index. When each social risk factor was evaluated separately, all the individual-level social risk factors were associated with higher spending and readmission rates. However, when all of the social risk factors were included together, only a couple were still associated with poor outcomes. Dual enrollment in Medicare and Medicaid was associated with both higher spending and readmissions, and social relationships (not being married or living alone) was associated with higher spending. In the total per capita cost measure (TPCC), dual enrollment was a stronger predictor of higher costs than social relationships—confirming Study A's finding that dual enrollment is the most powerful predictor of poor outcomes among the social risk factors evaluated. This finding points to the need to assess health equity and provide adequate information on providers' performance based on who they serve.

This Report also evaluated the current medical risk-adjustment approaches. It assessed the extent to which unmeasured functional risk factors (defined as physical or cognitive impairments that impair functioning) may contribute to observed worse outcomes among dually enrolled beneficiaries using both claims-based and patient self-reported functional limitations. In most quality and resource use measures evaluated, functional risk was associated with both dual-enrollment status and poor outcomes, indicating that not accounting for functional risk may increase the observed effect of dual-enrollment status.

C. FINDING 3: Although many organizations are working to improve equity by addressing social risk, which interventions are effective, replicable, and scalable remains unclear due to limited evaluation.

To reward and support better outcomes for beneficiaries with social risk factors, successful strategies need to be identified and disseminated. Many organizations are working to improve care for beneficiaries with social risk factors, but some interventions may be more effective than others. Although many submitters responding to ASPE's RFI described interventions to improve care for these beneficiaries, few of these interventions have been rigorously evaluated. The limited published evidence on the effectiveness and return on investment of certain interventions may be a starting point for organizations looking for new ways to improve care. However, evaluations of more and different types of interventions are still needed, including evidence on whether interventions are effective in different patient populations, across a range of organizations, and scaled to larger or smaller groups.

III. Recommendations

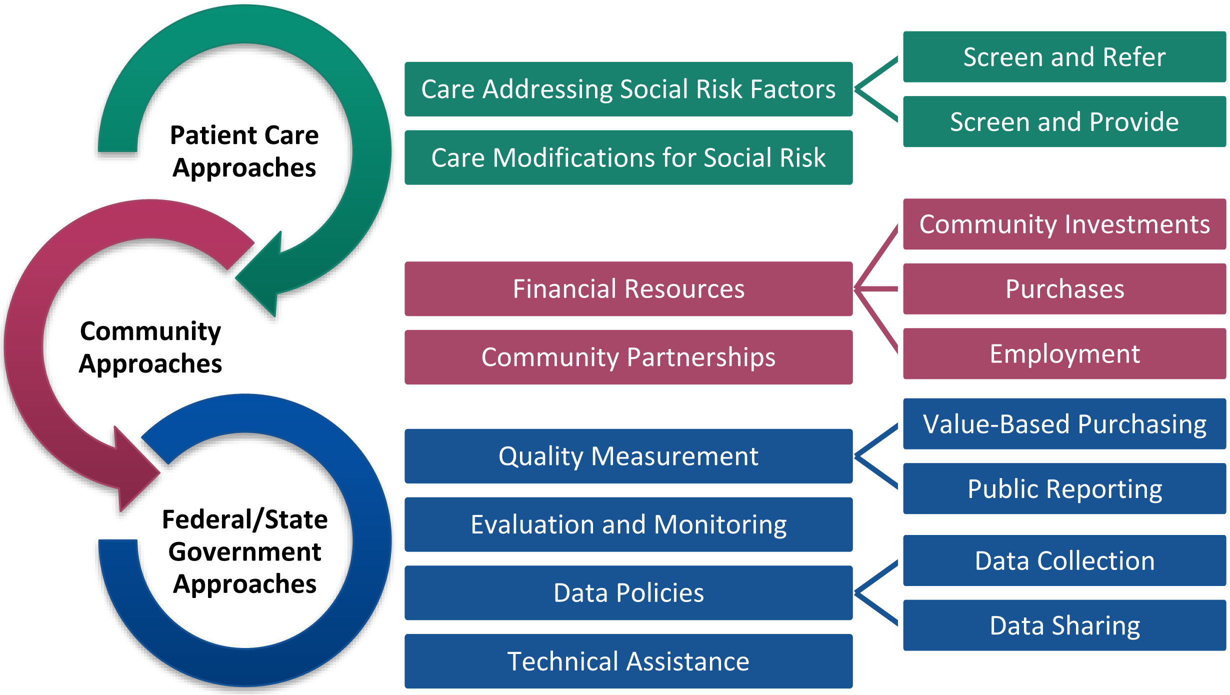
The recommendations included below build on the framework and considerations introduced in Study A and the policy questions introduced earlier for this Report. Recommendations are required by Congress in the IMPACT Act.

Policy questions:

1. Should some or all of Medicare's value-based purchasing programs account for social risk by adjusting measures and/or payment based on those measures?
2. Should HHS routinely collect more extensive and detailed data on beneficiaries' social risk factors than is currently available?
3. How can HHS achieve better outcomes for all Medicare beneficiaries by facilitating the ability of providers and communities to address social risk factors and integrate health and social services?

As discussed in the emerging areas section (Section 3 of this Report), addressing social risk factors and supporting better health outcomes will require connections between every level of the health system and the community (Figure 1.2). Providers can screen for social needs and refer beneficiaries to organizations to address those needs. Social needs may be better addressed through community collaborations, including referral networks and partnerships within and outside the health care system. Payers, including health plans and government agencies, can maintain social risk information about beneficiaries and fund infrastructure development to address social needs. At each of these levels, value-based care is an important tool to align incentives across the health care delivery system to address social needs.

Figure 1.2. Approaches for Health Care Systems to Invest in Addressing Social Risk



Adapted from: Gottlieb L, Fichtenberg C, Alderwick H, Adler N. Social Determinants of Health: What's a Healthcare System to Do? Journal of Healthcare Management 2019;64:243-57. doi:10.1097/jhm-d-18-00160.

A. A Comprehensive Strategy to Account for Social Risk in Medicare's VBP Programs

As Medicare's VBP programs mature, it is important to shift from modifying individual programs to adopting and implementing strategies that cut across all programs and health care settings. Quality reporting and VBP programs need to work in concert to create aligned incentives that drive providers to improve health outcomes for all beneficiaries. Thus, the recommendations in this Report apply to *all* of Medicare's quality reporting and VBP programs to create a comprehensive approach to account for social risk.

The recommendations in this Report build on the three-part strategy for accounting for social risk in Medicare's VBP programs (Figure 1.1) introduced in Study A. The strategy lays out a comprehensive approach to move towards programs that incentivize providers and plans to improve health outcomes by rewarding and supporting better outcomes for beneficiaries with social risk factors. This requires measuring and reporting quality by social risk (Strategy 1). Support is also needed to reward and support better outcomes for all beneficiaries, including those with social risk factors (Strategy 3). These two strategies provide support for providers to be held to the same high, fair quality standards for all beneficiaries (Strategy 2). As this strategy is realized, VBP and quality programs will need to align incentives for providers to improve care for socially at-risk beneficiaries. Rather than adjusting quality measures and VBP performance scores for social risk, this strategy focuses on supporting providers in addressing social risk (Strategy 3).

Although the recommendations are discussed in detail within each of the strategies, they are more likely to be successful if the recommendations across the strategies are implemented together as a comprehensive approach to addressing social risk in Medicare. For example, the recommendations for Strategy 2: Set High, Fair Quality Standards for All Beneficiaries discuss how to account for social risk in VBP measures and programs. The recommendations do not support adjusting outcome measures for social risk factors, nor do they support using peer groups for VBP performance score calculations. However, under the current VBP measures and programs, providers treating more socially at-risk beneficiaries may have worse performance and the recommendations for Strategy 2 alone do not address this disparity. Therefore, this comprehensive strategy directly addresses the disparity in outcomes by providing additional tools and resources to safety-net providers.

Changing VBP quality measures and performance scores alone, without providing incentives to improve health equity or additional tools and resources, is unlikely to improve care for socially at-risk beneficiaries. This comprehensive strategy seeks to respond to the third policy question evaluated in this Report, "How can HHS achieve better outcomes for all Medicare beneficiaries by facilitating the ability of providers and communities to address social risk factors and integrate health and social services?"

However, some of the key components needed to make this comprehensive strategy successful are not yet available. More work is needed to develop both health equity measures to reward providers for improving care for beneficiaries with social needs, as well as VPB payment adjustments and supplemental benefits to support providers' efforts. Thus, the recommendations across the three strategies need to be implemented in phases.

Some of these recommendations could be implemented soon, while others require more development before implementation can proceed. For example, changes to measures' medical risk adjustment methodology (Recommendation 2.1) could be implemented in the near future, as the indicators of functional risk assessed in this Report are already available. On the other hand, health equity measures or domains (Recommendations 1.3 and 2.2) are not yet readily available, and measure developers and endorsement organizations need to build such measures before they can be incorporated into VBP programs and replace current transitional approaches such as the categorical adjustment index (CAI). For this reason, implementing some of the recommendations in this Report requires more developmental work so that the Medicare program can implement a comprehensive approach to addressing social risk.

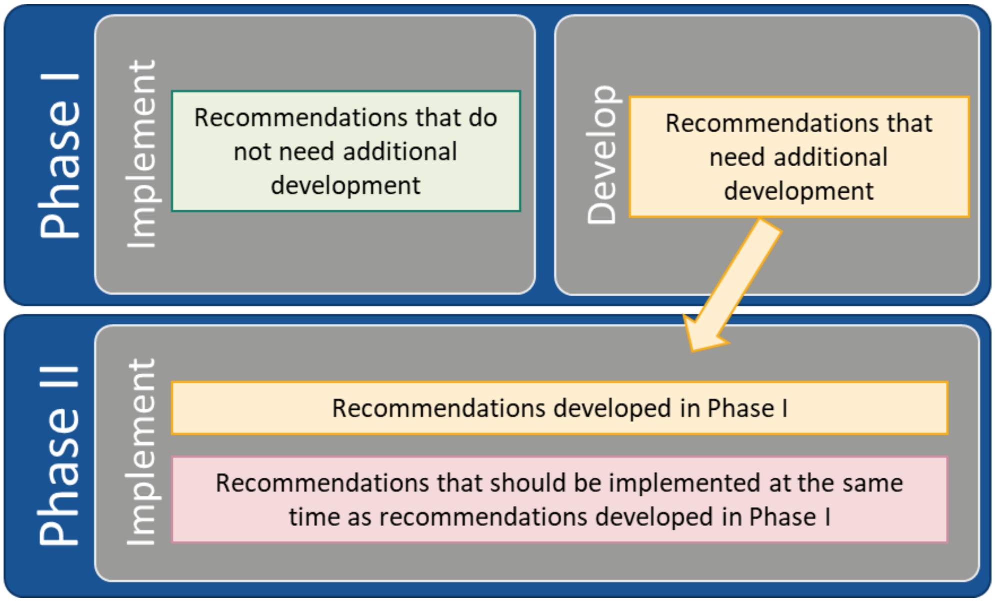
Some recommendations can be implemented alone, while others should be implemented together to achieve the policy goals described above. For instance, efforts to increase the sharing of social risk data across federal agencies and across the health and social service sectors at the local level (Recommendation 1.2) can proceed without the need to wait for other recommendations. On the other hand, implementing Recommendation 2.5 by removing peer grouping from the Hospital Readmissions Reduction Program (HRRP) and the CAI from the Medicare Advantage Star Ratings needs to be implemented along with additional actions to help providers achieve high quality outcomes for all beneficiaries. The goal of implementing these recommendations together is to hold all providers to the same high standards while giving providers additional tools and resources to help achieve these high standards. Additionally, this comprehensive approach calls for enhancing risk adjustment methodologies.

Without implementing these recommendations together, providers treating more socially at-risk beneficiaries would lose the current protections of peer grouping and the CAI. These actions and tools could include supplemental benefits and additional payment adjustments to providers (Recommendation 3.1), a standard risk adjustment framework that includes functional risk adjustment (Recommendation 2.1), or including health equity measures or domains in VBP programs (Recommendation 2.2). For example, it may be appropriate to remove peer grouping from the HRRP once the readmission measures use the standard risk adjustment framework that includes functional risk adjustment. As actions and tools to help providers achieve high-quality care for all beneficiaries are implemented, their impact on safety-net providers will need to be assessed, and further modifications may be necessary.

For these reasons, the recommendations included in this Report may be implemented in two phases (Figure 1.3).

- Phase 1: recommendations that are ready to be implemented independently in the first phase can begin now.
- Phase 2: recommendations that require further development can then be implemented in the second phase. Some recommendations do not require further development, but should be implemented in phase 2 at the same time as other recommendations that do require development, such as Recommendation 2.5 discussed above. Removal of peer grouping from programs should be implemented in the second phase, after actions and tools to help providers achieve high-quality care for all beneficiaries through one or more of the methods discussed above.

Figure 1.3. Implementation Phases



Note: Implementation phases including specific recommendations are presented in the summary section after the detailed recommendations.

B. Recommendations

Strategy 1: Measure and Report Quality for Beneficiaries with Social Risk Factors

This strategy includes collecting data on social risk and reporting quality measures by patient social risk to guide and encourage providers to identify and address patients' social needs and reduce health disparities. Separately reporting quality measures for those patients with and without social risk will facilitate measuring progress toward closing the gap in performance on quality measures between these two groups of patients.

Recommendation 1.1: HHS should support and inform the development of data collection and interoperability standards for social risk. CMS should explore ways to encourage providers to collect social risk information.

This recommendation addresses Congress' requirement that the Secretary make recommendations on obtaining access to social risk data.

Study A included the consideration "Consider enhancing data collection and developing statistical techniques to allow measurement and reporting of performance for beneficiaries with social risk factors on key quality and resource use measures." Since that time, there has been an increased focus on collecting and using beneficiary social risk information. However, there is still no consensus on how the data will be used, an important question that needs to be answered before data collection can be standardized. Deciding how data will be used will help to determine (1) which questions should be asked, and (2) how the responses should be documented. For each of these issues, there are opportunities to provide standards and/or to encourage data collection.

The choice of screening tool determines which questions will be asked. Currently numerous tools are widely used. The ideal screening tool depends on the planned use of social needs information. If the primary goal is to direct beneficiaries to services to address their social needs, providers need more detailed information to make appropriate referrals, implement interventions, and track resolution of needs over time. On the other hand, if social risk is used to risk adjust measures, payments, or population monitoring, less detail may be sufficient. Already, CMS has developed a social risk screening tool used in the Accountable Health Communities model and the social risk items proposed for the post-acute care screening tools.[10,11] These instruments are required for specific programs but could be used more broadly for the Medicare population. Alternatively, HHS could provide standards on which screening tool should be used but allow providers and plans to determine whether or not to use it to collect social risk information.

Knowing who needs information on the beneficiary's social risk also affects how the data should be documented. Here there are also various options worth considering. Currently, as noted earlier, social risk information can be captured in clinical documentation and/or in recording diagnosis codes. The federal government, state government, and health plans can most easily access information documented as a diagnosis codes in claims because claims are submitted to the payer for reimbursement. HHS may need additional social risk information for VBP program monitoring and evaluation.

For other health and social service providers, it may be easier to access information from clinical documentation, as providers may be able to share EHR information more easily than they can share claims. Yet if multiple parts of a single health system need the information, provider notes may be sufficient. However, different documentation methods may be ideal for different parts of the health care system. One solution may be to create "crosswalks" to translate social risk information from one format to another. Additionally, EHR captured data and/or diagnosis codes may need to be expanded to allow capture of more detailed social risk information. As with screening tools, HHS could provide standards for data documentation with or without encouraging providers and plans to document social risk factors.

HHS has developed data standards for documentation of some social risk information. The Office of the National Coordinator for Health Information Technology (ONC) included social, psychological, and behavioral standards in the 2015 health information technology certification criteria, providing interoperability standards (LOINC (Logical Observation Identifiers Names and Codes) and SNOMED CT (Systematized Nomenclature of Medicine—Clinical Terms)) for financial strain, education, social connection and isolation, and others.[12] ONC has also released a draft 2020-2025 Federal Health IT Strategic Plan for public comments, including an objective to integrate health and human services information.[13] Additional stakeholder efforts are underway to expand the availability to capture additional social determinants of health data elements for use and exchange. This includes the Gravity Project to identify and harmonize social risk factor data for interoperable electronic health information exchange for EHR fields as well as proposals to expand the ICD-10 (International Classification of Diseases, Tenth Revision) z-codes, the alphanumeric codes used worldwide to represent diagnoses.[14,15]

Recommendation 1.2: Federal and state agencies should consider policies regarding how and when to share social risk data across agencies. HHS should explore whether some social risk data can/should be shared at the local level between health and social service providers.

This recommendation addresses Congress' requirement that the Secretary make recommendations on obtaining access to social risk data.

In addition to, or even before, new social risk information is collected, existing information should be shared to reduce the burden of new data collection. This was discussed in the National Academies of Sciences, Engineering, and Medicine's (NASEM) report on data sources as well as in the submitted responses to ASPE's request for information on provider and health plan approaches to improving care for Medicare beneficiaries with social risk factors.[16] The NASEM report specifically identified data elements collected by the Social Security Administration, the Census Bureau, and Centers for Disease Control and Prevention's (CDC's) National Center for Health Statistics.

Such data sharing has been promoted by the bipartisan Commission on Evidence-based Policymaking's report and the Foundations for Evidence-Based Policymaking Act of 2018,[17,18] and these new developments are promising as improvements to the current state, in which sharing and linking data across agencies or departments within the federal government can be difficult and burdensome. For example, this Report intended to use Medicare beneficiaries' individual-level responses to the American Community Survey (ACS) and Medicare claims to evaluate the effect of the social risk factors available in the ACS on quality and resource use measures included in Medicare's value-based purchasing (VBP) programs. However, at the time of submission, the merged Medicare-ACS data were not yet available. A standard agreement across federal agencies that addresses confidentiality and security could make such data sharing smoother than the current process that requires each project to create a new agreement from scratch.

Within the Department, efforts have begun to understand the current state of data sharing across agencies, including an evaluation of challenges in doing so in the 2018 report "The State of Data Sharing at the U.S. Department of Health and Human Services" by the HHS's Office of the Chief Technology Officer. As these challenges are addressed to allow data sharing across the Department, the next logical step would be to expand this analysis to additional departments and identify and address challenges in data sharing across the federal, state, and local governments.

Beyond sharing current administrative data, the Department, including ONC, the Office for Civil Rights (OCR)—which enforces the Health Insurance Portability and Accountability Act (HIPAA) Privacy Rule—and the HHS Office of the Chief Technology Officer (CTO), should explore whether and how health and social service providers can share their social risk data. The necessity for and type of data to be shared would depend on the utility of the available data to providers and addressing any data security, privacy, or governance concerns for sharing and documentation. As data needs and uses will depend on the specific health and social service providers involved, these decisions should be made at the local level.

Recommendation 1.3: Quality reporting programs should include health equity measures.

This recommendation addresses Congress' requirements that the Secretary make recommendations on accounting for social risk in quality and resource use measures.

This recommendation also mirrors the second consideration in Study A: "Consider developing and introducing health equity measures or domains into existing payment programs to measure disparities and incent a focus on reducing them." Currently, no quality reporting programs explicitly include health equity measures that provide incentives to reduce health disparities. Including health equity measures can help providers prioritize areas for particular focus, and specific measures targeting equity within existing quality reporting programs can motivate a focus on reducing disparities and signal that health equity is an important component of delivery system transformation. These measures could also encourage providers to address health equity through service enhancements, patient engagement activities, and adoption of best practices to improve performance in this domain. Public reporting of health equity measures or domains would support monitoring of health disparities over time and help inform consumers' choice of providers.

Implementing this recommendation, however, will first require measure developers to create health equity measures. Health equity could be measured in various ways, including the difference in performance on particular measures between socially at-risk and other beneficiaries within a providers' population, comparing performance for socially at-risk populations across providers, or evaluating improvement in measure performance for a providers' socially at-risk population over time. One existing measure is the Health Equity Summary Score developed by CMS OMH.[19] The use of health equity measures in VBP programs is discussed in Recommendation 2.3.

Recommendation 1.4: Quality and resource use measures should be reported separately for dually enrolled beneficiaries and other beneficiaries.

This recommendation addresses Congress' requirement that the Secretary should make recommendations on how to account for social risk factors in quality and resource use measures.

This recommendation builds on the first consideration in Study A: "Consider enhancing data collection and developing statistical techniques to allow measurement and reporting of performance for beneficiaries with social risk factors on key quality and resource use measures." This Report also finds that dual enrollment is the strongest predictor of poor outcomes, and for that reason recommends stratifying reported measures by dual enrollment in quality reporting programs.

Since Study A was published, substantial progress has been made on stratified reporting of measures. Currently, CMS's Office of Minority Health (OMH) Mapping Medicare Disparities tool compares quality and resource use outcomes for dually enrolled and non-dually enrolled beneficiaries,[20] and CMS has begun providing hospitals with confidential reports of pneumonia readmission rates for dually enrolled compared to other beneficiaries.[21] These efforts could be expanded either by including additional measures or providers on OMH's Mapping Medicare Disparities tool or by adding stratified measures to CMS's compare websites (Hospital Compare, Nursing Home Compare, Home Health Compare, Dialysis Facility Compare, Long-Term Care Hospital Compare, Inpatient Rehabilitation Facility Compare, Physician Compare, Hospice Compare, and Medicare Plan Finder). This additional information could allow policy makers and providers to measure and track quality, outcomes, and costs for beneficiaries with social risk factors over time to reduce disparities and improve care for beneficiaries with social risk factors. However, adding stratified measures may be confusing, rather than helpful, for beneficiaries using these tools to select a provider. For that reason, it may be most appropriate to include these stratified measures on a separate data site rather than websites designed to help patients select high-quality providers.

Recommendation 1.5: Quality and resource use measures should *not* be adjusted for social risk factors for public reporting.

This recommendation addresses Congress' requirement that the Secretary should make recommendations on how to account for social risk factors in quality and resource use measures.

As discussed in Recommendation 1.4 above, stratified reporting is important to monitor disparities and improvements over time. However, in public reporting, it is also important to hold providers accountable for overall results, regardless of social risk. For this reason, quality and resource use measures should also be reported for a provider's overall population without adjustment for social risk.

Recommendation 1.6: Composite scores should *not* be adjusted for social risk factors for public reporting.

This recommendation addresses Congress' requirement that the Secretary should make recommendations on how to account for social risk factors in quality and resource use measures.

In addition to *not* to adjusting measures for social risk in public reporting (Recommendation 1.5), composite scores, such as star ratings, should *not* be adjusted for social risk factors. Composite scores used for public reporting should *not* use measures that are adjusted for social risk factors. They should also *not* use other methods to account for social risk, such as peer grouping.

Strategy 2: Set High, Fair Quality Standards for All Beneficiaries

This strategy aims to hold providers accountable to the same standards in VBP programs to improve care and health outcomes for all Medicare beneficiaries. It recognizes that beneficiaries with social risk factors may require more supports and resources to achieve the same outcomes. A standard, comprehensive risk-adjustment framework for all outcome and resource use measures, including functional risk factors, improves provider comparisons across measures.

Recommendation 2.1: Measure developers and endorsement organizations should create a standard risk-adjustment framework that includes functional risk for all risk-adjusted outcome and resource use measures used in Medicare programs.

This recommendation addresses Congress' requirements that the Secretary make recommendations on accounting for social risk in quality and resource use measures.

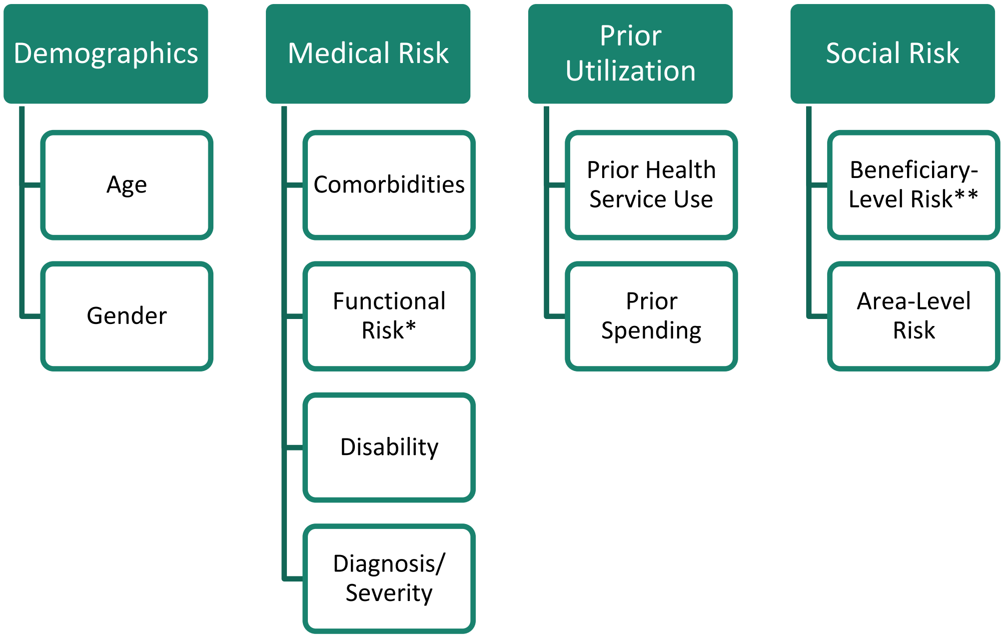
Measures used in VBP programs would benefit from a standard risk adjustment framework that sets a consistent policy for a number of reasons. First, the current lack of standardization across measures makes it difficult to accurately assess the role of social risk, as social risk is correlated with medical risk: both comorbidities and functional status. Thus, measures that include more medical risk adjustment are likely to see a smaller effect of social risk, making it difficult to compare and track disparities across measures and patient populations. Second, the use of different risk adjustment methods and factors make it difficult to compare performance across measures. If a provider does better on one measure than another, it may be due to differences in performance or differences in the measures' risk adjustment.

As discussed in Chapter 5, current outcome and resource use measures in Medicare's VBP programs use a variety of risk-adjustment methods and measures. These include different methods to adjust for medical risk such as comorbidities, functional risk adjustment, or reason for hospitalization (diagnosis). Some measures include social risk adjustment using the beneficiary-level risk factor of dual enrollment status. Despite the general consensus on the importance of medical risk adjustment, however, many measures currently used do not include functional risk adjustment. To fully account for differences in health status between beneficiaries, it is important for measure developers to follow a consistent policy across measures and to account for functional risk factors in *all* outcome and resource use measures' risk adjustment. One possible approach to account for functional risk factors using ICD codes is presented in this Report. Note that this recommendation does not apply to measures that do not use risk adjustment, such as process measures where the same process is expected for all beneficiaries.

Figure 1.4. illustrates the different factors that can potentially be used in risk adjustment and that should be considered for a standard risk-adjustment framework. Social risk factors are depicted in the figure's right column, but are not recommended to be included in the risk-adjustment of process or outcome measures. Demographics and medical risk adjustment are widely accepted as appropriate and important risk-adjustment factors. Some measures include prior utilization, but not all. Almost no measures at this time include social risk, except patient experience of care survey measures. Social risk factors are *not* recommended for the standard, clinical risk-adjustment model. Recommendations 2.3-2.5 discuss the appropriateness of adjusting for social risk by type of measure.

As discussed in more detail in this Report's introductory chapters, the appropriate risk-adjustment approach may depend on the planned use of the measure (i.e., public health surveillance, population health management, quality improvement, quality reporting, VBP, or program evaluation). The standard risk-adjustment framework as suggested by this recommendation may need to specify different risk-adjustment methods for different uses (i.e., standardized age/gender adjusted outcomes for population health management, clinically risk-adjusted quality measures stratified by patient subgroups for quality reporting, etc.).

Figure 1.4. Potential Risk-Adjustment Variables



*This Report includes the recommendation to include functional risk in the standard risk adjustment framework.
**This Report includes the recommendations to adjust resource use and patient experience measures for dual enrollment status as a beneficiary-level social risk factor, but *not* to adjust quality process or outcome measures for social risk.
Note: This Report does not include specific recommendations for other potential risk adjustment variables.

Recommendation 2.2: Value-based purchasing programs should include health equity measures and/or domains.

This recommendation addresses Congress' requirements that the Secretary make recommendations on accounting for social risk in quality and resource use measures and in determining payment adjustments based on these measures.

This recommendation is similar to recommendation 1.3, but focuses on the use of health equity measures in VBP programs rather than quality reporting programs. Currently, no VBP programs explicitly include health equity measures that provide incentives to reduce health disparities, although the Merit-based Incentive Payment System (MIPS) program does include some optional health equity activities in the improvement activities performance category. As with public reporting of health equity measures, including health equity measures in VBP programs can help providers prioritize areas for particular focus, help providers focus on reducing disparities, and signal that health equity is an important component of delivery system transformation. Once health equity measures are developed for public reporting, they can be included in existing VBP programs as allowed by statute.

Recommendation 2.3: Resource use and patient experience measures should adjust for social risk factors in VBP programs.

This recommendation addresses Congress' requirements that the Secretary make recommendations on accounting for social risk in quality and resource use measures.

1. A framework for considering social risk adjustment by type of measure

As discussed above in Recommendation 2.1, measures used in VBP programs would benefit from a standard risk adjustment framework that sets a consistent policy. Polices could be established across all types of measures or separately for each type (process, outcome, patient experience, and resource use).

One solution that has been advocated for accounting for social risk in Medicare's VBP programs is adding social risk factors to all measures' risk adjustment to "level the playing field." The appeal of this approach is that it recognizes the greater challenges that may be faced in achieving the same outcomes for beneficiaries with social risk factors and may reduce the likelihood that concerns about performance could worsen access to care for these groups. Such considerations are particularly appropriate in situations in which measure performance is closely tied to social risk, and the consequences of this risk on outcomes are truly beyond providers' control, making the benefits of adjustment outweigh the drawbacks. In this case, it would still be important for VBP programs to include incentives for providing high-quality care for socially at-risk beneficiaries in other ways, such as including health equity measures or domains as discussed in Strategy 1 above.

Alternatively, risk-adjustment policies could be developed by type of measure, in conjunction with a set of criteria on the appropriateness of risk-adjustment.

As described in Chapter 5, measures are *less* appropriate for social risk adjustment if:

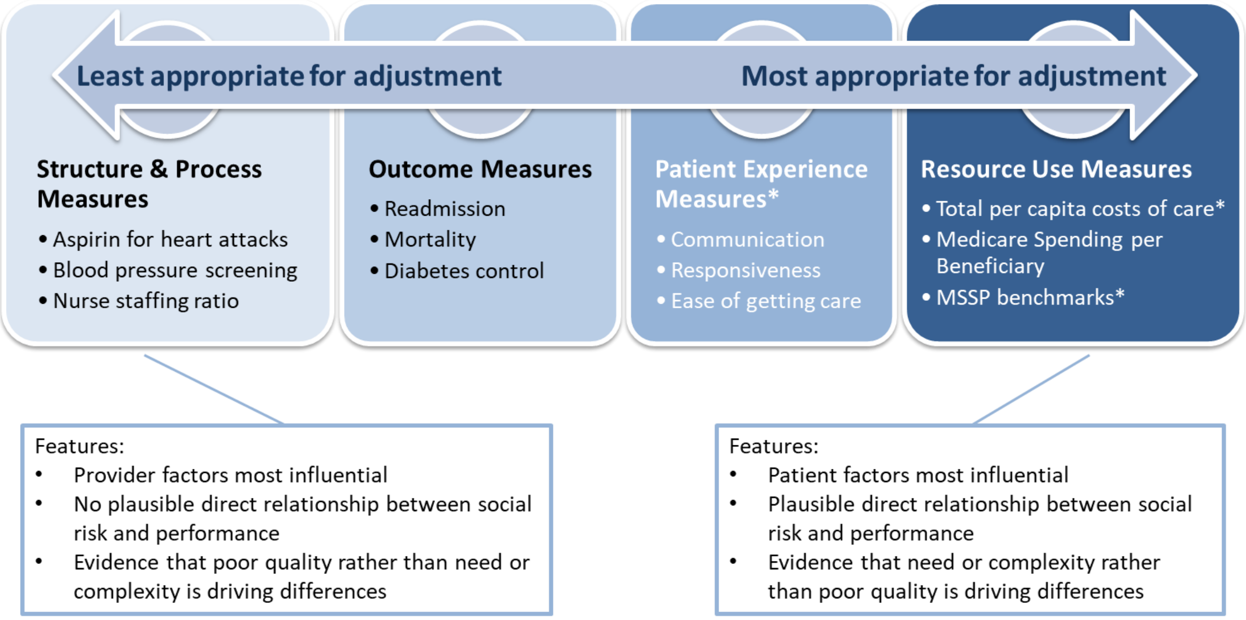
1. They are predominantly under the control of the provider,
2. There is no plausible direct relationship between the social risk factor and the outcome, and
3. There is evidence that provider bias, rather than patient need or complexity, is driving differences in performance.

Measures are *more* appropriate for social risk adjustment if the differences in outcomes or utilization are:

1. Predominantly related to patient factors,
2. If there is a plausible direct relationship between the social risk factor and the outcome, and
3. If there is evidence that patient need or complexity, rather than provider performance, is driving differences in performance.

Given that the role of social risk varies by type of measure, the appropriateness of adjusting measures for social risk may be better considered along a continuum, as shown in Figure 1.5.

Figure 1.5. Considerations for Adjusting Quality and Resource Use Measures for Social Risk by Measure Type



*=measure currently adjusted for social risk factor(s)

Note: MSSP=Medicare Shared Savings Program.

2. Adjust resource use measures for social risk to recognize more resources may be needed to achieve same outcomes

To account for the fact that it may require additional resources to achieve the same high quality care for socially at-risk beneficiaries, *all* resource use measures should adjust for social risk. In order to provide a consistent governing principle, all resource use measures should adjust for social risk. Some current resource use measures adjust for social risk, including the MIPS total per capita cost measure, which adjusts for the HCC (hierarchical condition category) risk score that in turn includes dual-enrollment status. Others, such as the Medicare Spending per Beneficiary measure, do not adjust for dual-enrollment status, even though the analyses in this Report find that dually enrolled beneficiaries have higher episode spending driven primarily by greater use of institutional and community-based post-acute care to meet their greater medical and social needs.

To provide consumers with information on the care that they should expect to receive, however, measures should *not* be adjusted for social risk in public reporting programs, but instead reported for dually enrolled beneficiaries and other beneficiaries separately as described in Recommendation 1.4.

3. Adjust patient experience measures for social risk to account for response tendencies

Patient experience measures, such as those collected by the CMS Consumer Assessment of Healthcare Providers and Systems (CAHPS) surveys, are currently adjusted for social risk using factors such as education, dual enrollment, and language.[22] These adjustments seek to account for differences in response tendencies associated with social risk factors, rather than differences in the quality of care provided.[23,24] For example, individuals with less education and those who report better general and mental health provide more positive ratings and reports of care than others in the same health insurer contracts.[22] In order to accurately assess the care provided and compare patients' experiences, these measures should continue to adjust for social risk factors.

Recommendation 2.4: Process and outcome measures should *not* be adjusted for social risk in value-based purchasing programs.

This recommendation addresses Congress' requirements that the Secretary make recommendations on accounting for social risk in quality and resource use measures.

Although Recommendation 2.3 recommends risk adjusting patient experience and resource use measures for social risk, for other types of measures, the drawbacks of adjusting for social risk are considerable for both process and outcome measures.

1. Process measures should *not* be adjusted for social risk

First, there are many quality measures for which there is no plausible role for any type of risk adjustment. Pure process measures such as giving aspirin for a heart attack, for example, are primarily under providers' control, and should be done regardless of a beneficiary's social risk profile. Second, adjusting the process of care quality measures risks masking disparities, potentially reducing the long-term ability to identify and reduce them. Third, adjusting quality measures may have a negative impact on transparency for consumers. Finally, to the degree that differences in measures reflect actual differences in provider performance, adjusting the measures directly could excuse the delivery of differential care to beneficiaries with social risk factors. For these reasons, process measures should *not* be adjusted for social risk factors.

2. Outcome measures should *not* be adjusted for social risk

In terms of appropriateness for adjusting for social risk, outcome measures fall in the middle of the spectrum shown in Figure 1.5 above. For many outcome measures, the provider has some control in the care given in the care setting, but outcomes are assessed at some point after the health care encounter. With 30-day readmissions, for example, providers can improve outcomes for socially at-risk beneficiaries through discharge planning, follow-up care, referrals for social services, and building relationships with community-based organizations. To hold all providers accountable to the same, high standards for all beneficiaries, therefore outcome measures should *not* be adjusted for social risk.

Because achieving the same high-quality outcomes may be more difficult for socially at-risk beneficiaries than for other beneficiaries, it is important to assist providers in achieving these high-quality outcomes for all beneficiaries. Rather than risk adjusting outcome measures for social risk to avoid VBP payment adjustments for worse outcomes for socially at-risk beneficiaries, programs should provide support in other ways. This could include additional payments or bonuses to safety-net providers. Although they are for different purposes, there are already existing payments and bonuses that target safety-net providers, including the current DSH payments and the bonus points for small practices and practices with a higher share of medically and socially complex patients in the MIPS program. It could also include sharing best practices. Both of these recommendations are discussed in Strategy 3 below. To provide consumers with information on the care that they should expect to receive, moreover, measures should also *not* be adjusted for social risk in public reporting programs, but instead reported for dually enrolled beneficiaries and other beneficiaries separately as described in Recommendation 1.4.

Recommendation 2.5: Value-based purchasing programs should *not* use peer grouping or categorical adjustments for social risk factors. Where these adjustments are currently in place, they should be removed when additional actions and tools are implemented to help providers achieve high-quality care for all beneficiaries.

This recommendation addresses Congress' requirements that the Secretary make recommendations on determining payment adjustments in VBP programs.

In addition to *not* adjusting process or outcome measures (Recommendation 2.4), VBP performance scores should *not* be adjusted for social risk factors. This recommendation applies to using peer grouping to assign VBP payment adjustments, such as in the HRRP, and other methods like the CAI used in the MA Star Ratings program. Similar to the arguments against adjusting quality measures for social risk presented in Recommendation 2.4 above, peer grouping establishes different quality standards across providers. Under peer grouping, providers who serve more socially at-risk beneficiaries may avoid negative payment adjustments, even though they may have lower scores compared to providers with fewer socially at-risk beneficiaries. Instead, safety-net providers should have additional tools and resources to help them achieve high-quality outcomes for all beneficiaries, as discussed in Strategy 3 below. These additional tools and resources should be available for all providers that treat a large proportion of socially at-risk beneficiaries, regardless of their performance on specific measures or programs. For example, peer grouping compares performance across similar providers rather than all providers, but is still dependent on an individual provider's performance. Bonus points in a VBP program, on the other hand, provide additional resources to all safety net providers, regardless of their performance. For that reason, bonus points in VBP programs are appropriate as additional tools and resources, while peer grouping or the CAI are not. Once these additional actions, tools, and resources are available, approaches such as peer grouping or the CAI should be removed from VBP programs.

Strategy 3: Reward and Support Better Outcomes for Beneficiaries with Social Risk Factors

This strategy recognizes that providing additional supports and resources is foundational to address beneficiaries' social risk in order to improve care and outcomes. Such additional supports may include sharing best practices through learning networks and encouraging medical providers to build links with social service providers. Additional resources to meet beneficiaries' social needs may be made available through alternative payment models, supplemental benefits that address social needs, or additional payments. Targeted payments to support providers' efforts to address social risk factors may also be made through VBP incentive payments.

Recommendation 3.1: CMS should continue to support providers and plans addressing social risk factors through models, supplemental benefits, and VBP payment adjustments. HHS should continue to develop approaches to address beneficiaries' social needs. Additional research is needed on best practices for providing care to socially at-risk beneficiaries. Best practices, once identified, need to be scaled.

This recommendation addresses Congress' requirement that the Secretary should make recommendations on how to account for social risk factors in determining payment adjustments based on quality and resource use measures.

It is clear that simply adjusting measures does not fully address the tough, real problems underlying the pervasive differences in performance across measures and programs that were examined in this Report. Social risk factors are powerful, and to truly begin to "solve" the problem by making things better for beneficiaries with social risk factors and the providers who serve them, these factors need to be explicitly recognized and addressed. This recommendation to support providers and plans addressing social risk factors goes hand-in-hand with Recommendations 2.3-2.5 focusing on risk adjustment and other methods for accounting for social risk in Medicare's VBP programs. This Report recommends adjusting resource use and patient experience, but *not* process or outcome measures, for social risk. However, achieving the same high-quality outcomes may be more difficult for socially at-risk beneficiaries than for other beneficiaries. It is important to assist providers in achieving these high-quality outcomes for all beneficiaries with the resources (through models, supplemental benefits, and VBP payment adjustments) and tools (such as best practices) to achieve these outcomes.

Currently, Medicare provides payment adjustments for providers treating socially at-risk beneficiaries in some settings but not others (see table in the appendix to this chapter). Specifically, Medicare provides

DSH payments to hospitals treating a large proportion of dually enrolled beneficiaries as required by Congress, and has used administrative authority to provide bonus points for practices with a higher proportion of socially complex patients in the MIPS program. Although the recommendation that outcome measures should *not* be adjusted for social risk encourages providers to achieve the same high-quality outcomes for socially at-risk beneficiaries as their other patients, it is important to recognize that achieving these outcomes may require more resources for socially at-risk beneficiaries. Without additional payment adjustments, providers have reported that they may be disincentivized to treat socially at-risk beneficiaries, jeopardizing access to care.

CMS should also support providers and plans working to address beneficiaries' social needs through supplemental benefits. New flexibilities in the Medicare Advantage (MA) program will allow health plans to provide supplemental benefits that are not necessarily health-related but have a reasonable expectation of improving or maintaining the health or overall function (including benefits that secondarily address social risk factors), but these benefits are only available to beneficiaries with chronic conditions enrolled in MA plans.[6] Although a small percentage of plans are offering these new supplemental benefits in the first year available, interviews with MA plans before these new flexibilities were implemented found that plans were considering a variety of approaches, including screening beneficiaries for social needs and referring to community organizations to address those needs ("screen and refer"), and screening for social needs and directly providing services to address the needs identified ("screen and provide").[25,26] As these flexibilities are implemented, it will be important for MA plans and others to evaluate the extent to which any supplemental benefits address Medicare beneficiaries' social needs and impact quality and resource use measures.

Finally, knowledge about best practices to address beneficiaries' social risk is an important tool for achieving high quality outcomes for all beneficiaries. As evidenced by the responses to ASPE's RFI, providers and health plans are already implementing numerous interventions to address beneficiaries' social risks. Within HHS, a number of agencies including CMS, the Administration for Community Living (ACL), the Substance Abuse and Mental Health Services Administration (SAMHSA), and the Administration for Children and Families (ACF), work to address social risk factors. States in the Medicaid program are also taking various steps to address beneficiaries' social needs. However, the evaluations of these approaches are not yet mature, making it difficult for organizations wanting to adopt new interventions to choose effective approaches. HHS, through CMS's Innovation Center, has begun to develop and evaluate new models to address social risk and should continue to do so. For example, the current Accountable Health Communities model and evaluation will help to build the knowledge base about effective interventions, along with findings from evaluations of state models.[27,28] Additional models including incentive payments or alternative payment structures to address beneficiaries' social needs

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[6] The Bipartisan Budget Act of 2018 (Public Law No. 115-123) amended section 1852(a) of the Social Security Act to expand the types of supplemental benefits that may be offered by MA plans to chronically ill enrollees. These include supplemental benefits that are not primarily health related and may be offered non-uniformly to eligible chronically ill enrollees.

should be developed under various authorities to allow best practices to be identified, tested, disseminated broadly, and scaled.

Recommendation 3.2: Learning networks, such as Quality Improvement Organizations (QIOs), should share best practices across providers.

This recommendation addresses the policy question of how the federal government can facilitate the ability of health plans, providers, and communities to address social risk factors and integrate health and social services.

This recommendation to share best practices across providers goes hand-in-hand with Recommendations 2.3-2.5 focusing on risk adjustment and other methods for accounting for social risk in Medicare's VBP programs. This Report recommends adjusting resource use and patient experience measures, but *not* process or outcome measures, for social risk. However, achieving the same high-quality outcomes may be more difficult for socially at-risk beneficiaries than for other beneficiaries. It is important to assist providers in achieving these high-quality outcomes for all beneficiaries with resources and tools, such as best practices, to achieve these outcomes.

As more interventions are evaluated and the evidence of the effectiveness of different approaches grows, it is important to share this knowledge across the health care system. Currently, Quality Innovation Network Quality Improvement Organizations (QIN-QIOs) have an opportunity to identify and disseminate effective practices across providers.[29]

Recommendation 3.3: HHS should encourage medical providers and plans to build links with social service providers to better address beneficiaries' social needs.

This recommendation addresses the policy question of how the federal government can facilitate the ability of health plans, providers, and communities to address social risk factors and integrate health and social services.

VBP programs provide incentives for medical providers and plans to build relationships with social service providers. Current chronic-care management services, paid for by Medicare in addition to office visits, include coordinating community and social services for beneficiaries with multiple chronic conditions.[30] Nonetheless, one of the common themes in the submitted responses to ASPE's RFI was the difficulty of coordinating social and medical services. Although non-profit hospitals are currently required to conduct community-needs assessments and provide community benefits, there is much more than can be done.[31] Health care providers can screen for social needs and refer beneficiaries to organizations that can address those needs. However, many RFI respondents brought up challenges to this "screen and refer" approach. These included challenges in maintaining an up-to-date directory of social service providers, understanding eligibility criteria for different services, "closing the loop" after a referral is made to find out whether services were actually received, and the capacity of social services to meet beneficiaries' needs. Some providers and plans are going beyond "screen and refer" to "screen and provide" by providing services, such as food or housing, in concert with community organizations.

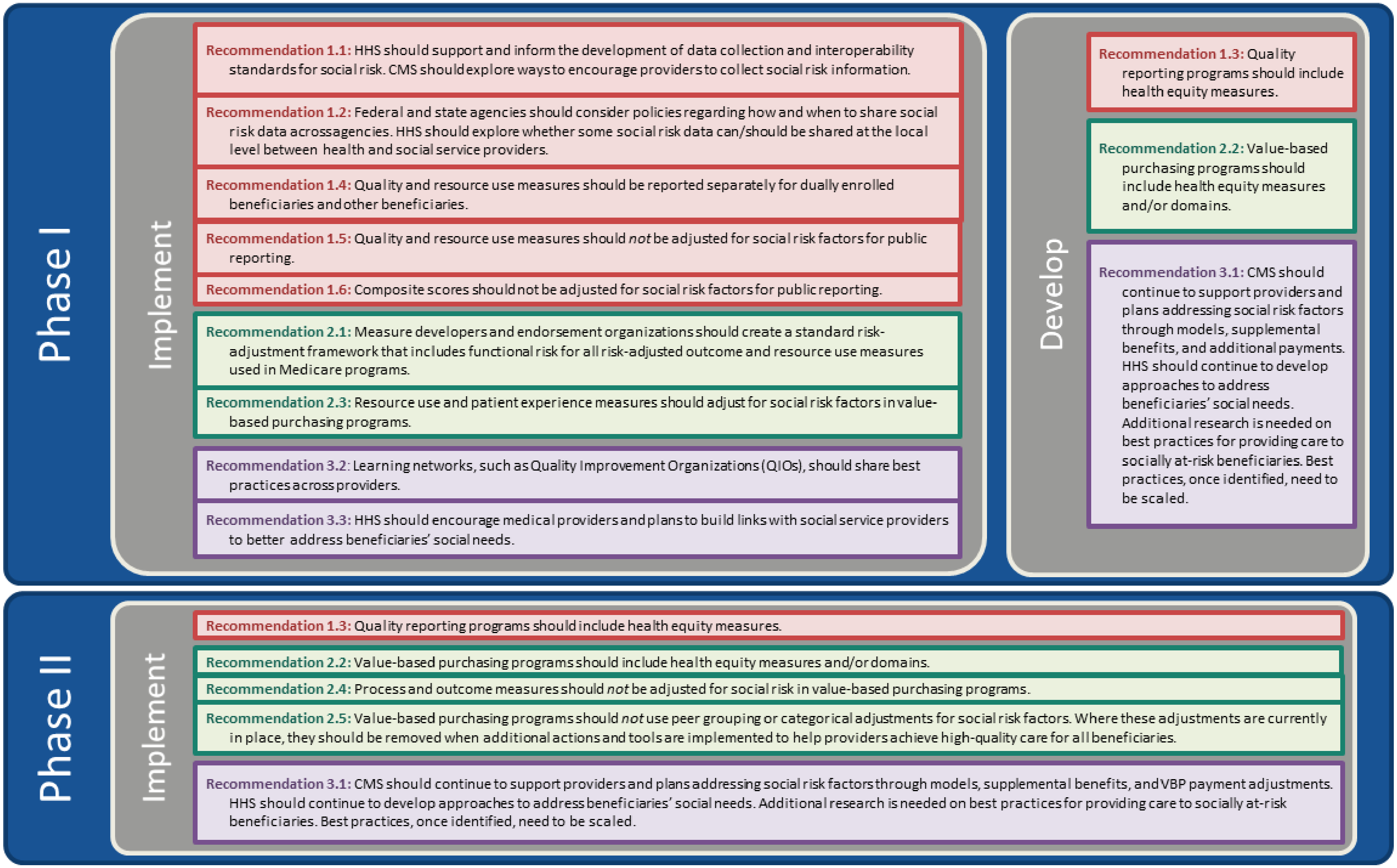
Better coordination between medical and social service providers could reduce these challenges. Specifically, HHS could encourage more community relationships through some of the recommendations above, such as developing data collection/interoperability standards, developing and testing new models for addressing social risk, and working with providers to evaluate and disseminate best practices for addressing the social needs of beneficiaries through home and community based services and social supports.

C. Summary of Recommendations

The comprehensive approach to addressing social risk in Medicare's VBP programs introduced above can be implemented in phases depending on the amount of development needed for each recommendation, as discussed earlier. Some recommendations can be implemented alone, while others should be implemented together to achieve the policy goals. For instance, implementing Recommendation 2.5 by removing peer grouping from the Hospital Readmissions Reduction Program (HRRP) and the CAI from the Medicare Advantage Star Ratings needs to be implemented along with additional actions and tools to help providers achieve high quality outcomes for all beneficiaries, such as adjustments to supplemental benefits and additional adjustments in payments to providers (Recommendation 3.1), a standard risk adjustment framework that includes functional risk adjustment (Recommendation 2.1), or including health equity measures or domains in VBP programs (Recommendation 1.3).

For these reasons, the recommendations included in this Report may be implemented in two phases. Potential timing for implementing each recommendation is shown in Figure 1.6.

Figure 1.6. Implementation Phases for Recommendations



Phase I

Implement

Recommendation 1.1: HHS should support and inform the development of data collection and interoperability standards for social risk. CMS should explore ways to encourage providers to collect social risk information.

Recommendation 1.2: Federal and state agencies should consider policies regarding how and when to share social risk data across agencies. HHS should explore whether some social risk data can/should be shared at the local level between health and social service providers.

Recommendation 1.4: Quality and resource use measures should be reported separately for dually enrolled beneficiaries and other beneficiaries.

Recommendation 1.5: Quality and resource use measures should *not* be adjusted for social risk factors for public reporting.

Recommendation 1.6: Composite scores should not be adjusted for social risk factors for public reporting.

Recommendation 2.1: Measure developers and endorsement organizations should create a standard risk-adjustment framework that includes functional risk for all risk-adjusted outcome and resource use measures used in Medicare programs.

Recommendation 2.3: Resource use and patient experience measures should adjust for social risk factors in value-based purchasing programs.

Recommendation 3.2: Learning networks, such as Quality Improvement Organizations (QIOs), should share best practices across providers.

Recommendation 3.3: HHS should encourage medical providers and plans to build links with social service providers to better address beneficiaries' social needs.

Develop

Recommendation 1.3: Quality reporting programs should include health equity measures.

Recommendation 2.2: Value-based purchasing programs should include health equity measures and/or domains.

Recommendation 3.1: CMS should continue to support providers and plans addressing social risk factors through models, supplemental benefits, and additional payments. HHS should continue to develop approaches to address beneficiaries' social needs. Additional research is needed on best practices for providing care to socially at-risk beneficiaries. Best practices, once identified, need to be scaled.

Phase II

Implement

Recommendation 1.3: Quality reporting programs should include health equity measures.

Recommendation 2.2: Value-based purchasing programs should include health equity measures and/or domains.

Recommendation 2.4: Process and outcome measures should *not* be adjusted for social risk in value-based purchasing programs.

Recommendation 2.5: Value-based purchasing programs should *not* use peer grouping or categorical adjustments for social risk factors. Where these adjustments are currently in place, they should be removed when additional actions and tools are implemented to help providers achieve high-quality care for all beneficiaries.

Recommendation 3.1: CMS should continue to support providers and plans addressing social risk factors through models, supplemental benefits, and VBP payment adjustments. HHS should continue to develop approaches to address beneficiaries' social needs. Additional research is needed on best practices for providing care to socially at-risk beneficiaries. Best practices, once identified, need to be scaled.

In particular, Recommendations 1.5, 1.6, 2.3, 2.4, and 2.5 address how to account for social risk in measures and programs, including both VBP programs and quality reporting programs.

Table 1.1. Recommendations: Whether to Adjust for Social Risk Factors by Type of Measure and Program

Measure Type	Whether to Adjust for Social Risk Factors	
	Quality Reporting Programs	VBP Programs
Process Measures	No	No
Outcome Measures	No	No
Patient Experience Measures	Yes	Yes
Resource Use Measures	No	Yes
Program Performance Scores	No	No

Note: VBP=value-based purchasing.
"No" indicates a recommendation *not* to adjust for social risk factors.
"Yes" indicates a recommendation to adjust for social risk factors.

IV. Next Steps

This Report's analysis and recommendations address the policy questions put forth in the IMPACT Act. However, they also raise additional questions and propose new policies that should be evaluated for their effectiveness of achieving the intended results and potential unintended consequences.

A. Measure and Report Quality for Beneficiaries with Social Risk Factors

The findings about the current state of data collection for social risk factors suggest some changes that could improve social risk data collection and use to improve health outcomes. First, social risk measures and data collection tools could be standardized across federal, state, and local programs. Additionally, within the health care system, social risk factors could be mapped to electronic health record (EHR) fields and/or diagnosis codes. Existing EHR fields and diagnosis codes could also be expanded to include additional social risk factors and more information about beneficiaries' social needs. Much work is already being done to improve social risk data collection, but these are typically private efforts and many groups are working in the same area. As these efforts mature, it may be appropriate for the Department to set data collection standards and common data elements for social risk factors so that data can be collected in a systematic way and easily shared. Once this information is available, tracking progress in improving outcomes for socially at-risk beneficiaries will be important.

B. Set High, Fair Quality Standards for All Beneficiaries

These illustrate the difficulty of assessing the role of risk factors across measures, particularly when risk-adjustment approaches differ so much between the various quality and resource use measures included in Medicare's nine VBP programs. A standard risk-adjustment approach that could be used across measures and programs, and modified as necessary and appropriate, would help to address this issue.

This Report does not specify exactly which factors should be included in such a standard risk-adjustment approach, but the findings about the medical and social risk factors evaluated provide some insights.

Including functional risk adjustment would likely improve current medical risk adjustments that currently only use comorbidities. Including functional risk factors would also allow social risk to be assessed more accurately because some of the effect currently attributed to social risk may actually be due to functional risk. Additional analyses to determine which functional risk factors should be included is still needed.

In terms of including social risk factors in the standard risk-adjustment approach, this Report's findings suggest that including dual-enrollment status makes only small average differences in program impacts between safety-net or high-dual providers and other providers. In terms of additional sources of social risk information (beyond Medicare data), the findings suggest that dual-enrollment status is a good proxy for social risk, and adding any of the additional measures of social risk evaluated (including other Medicare or survey data) would not substantially improve the measure risk adjustment beyond what is achieved by including dual-enrollment status. Note, however, that the small sample sizes of the MCBS make the findings using this survey less conclusive; results from the forthcoming analysis using the American Community Survey may be different and shed more light on these conclusions.

C. Reward and Support Better Outcomes for Beneficiaries with Social Risk Factors

Providing high-quality care for all beneficiaries requires understanding which approaches are successful for socially at-risk beneficiaries specifically. Such understanding in turn requires rigorous evaluations of current interventions to determine what works, and sharing and promoting best practices across the health care system. Since many current interventions include referrals to social service providers, the health care system needs community resources and links to social service providers to address beneficiaries' social needs, as well as a better understanding of their efficacy. The cost of these interventions and services should also be evaluated to understand the additional resources needed to achieve high quality outcomes for socially at-risk beneficiaries.

Equally important will be tracking supplemental benefits to address social needs provided by the promising flexible state and federal policies as they are implemented, including their success in improving health outcomes for socially at-risk populations. It will also be important to understand what supplemental benefits MA plans offer with the new flexibilities for supplemental benefits authorized by the CHRONIC Care Act, as well as the extent to which any additional benefits address Medicare beneficiaries' social needs and impact quality and resource use measures. Additionally, by ensuring that the measures and programs are relevant for dually enrolled beneficiaries through reporting measures separately for dually enrolled and other beneficiaries and including health equity measures in VBP programs, Medicare's VBP programs will be better able to incentivize high-quality care for socially at-risk beneficiaries.

Beyond the specific approaches needed for socially at-risk beneficiaries, future work should evaluate the success of the move to value-based programs. Addressing social needs is only one part of moving to value-based care. As new VBP programs are adopted and existing programs mature, it will be important to understand whether these programs are achieving their objectives and avoiding unintended consequences.

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Section 1: Introduction

Chapter 1. Introduction

In recent years, the U.S. Department of Health and Human Services has embraced value-based purchasing (VBP) as a strategy for the Medicare program to achieve greater value for the nation's health dollar, as measured by quality outcomes and cost of care. While definitions of VBP vary, the general policy objectives are to move away from fee-for-service payments, to pay for health care quality versus quantity of services provided, and to incentivize the provision of patient-centered, coordinated care. Under these policies, providers[a] that participate in Medicare are held financially accountable for both the cost and quality of health care services. While strong incentives for achieving VBP objectives are critical, it is also important to apply such incentives fairly—that is, to recognize when these incentives place plans or providers at a relative disadvantage. In this regard, there has been considerable discussion on whether VBP programs should account for differences in populations between providers and, in particular, whether programs should account for beneficiaries with social risk factors (also known as "social determinants of health")–that is, people for whom factors such as income, housing, social support, transportation, and nutrition might adversely affect access to health services or desired health outcomes.[1-7] The ongoing transition to VBP has been accompanied by growing recognition that to achieve VBP's objectives, the nation's health care delivery system must draw upon social and community services to address social risk factors.[8,9] This Report will explore emerging trends among providers who are addressing social risk factors in part by developing linkages with social service providers and other community-based organizations.

Congress responded to the need to develop high-quality evidence to guide policy decisions about the role of social risk in VBP in part by calling for this Report. Section 2(d) of the Improving Medicare Post-Acute Care Transformation (IMPACT) Act of 2014 called for the Secretary of Health and Human Services (HHS), acting through the Office of the Assistant Secretary for Planning and Evaluation (ASPE), to conduct a study evaluating the effect of individuals' socioeconomic status (SES) on quality measures and measures of resource use under the Medicare program. The statute (the full legislative text of which can be found in this chapter's appendix) requires a study with the following four components:

- "Study A,"[b] which focused on SES information currently available in Medicare data, and Medicaid eligibility and urban-versus-rural location.[c] Study A introduced the broader concept of social risk factors to replace SES and was submitted as a Report to Congress in December 2016.
- "Study B," which expands the analyses by using non-Medicare datasets to examine the impact of risk factors on quality resource use, and other measures, is the subject of this Report.[d] Study B was due to the Congress in October 2019.

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[a] Note that in this Report the term "providers" is used to indicate physicians, hospitals, dialysis facilities, nursing facilities, Medicare Advantage contracts, etc.

[b] The term "Study A" is based on the statutory mandate in section 2(d)(1)(A) of the Improving Medicare Post-Acute Care Transformation (IMPACT) Act of 2014.

[c] Improving Medicare Post-Acute Care Transformation (IMPACT) Act of 2014, Section 2(d)(1)(A)

[d] Improving Medicare Post-Acute Care Transformation (IMPACT) Act of 2014, Section 2(d)(1)(B)

- An examination of non-Medicare data sources to inform and contextualize Studies A and B focusing on data availability and use.[a] The National Academies of Science, Engineering, and Medicine (NASEM) prepared a set of five reports commissioned by ASPE and released in 2017 on this topic. This Report builds on and extends the NASEM data work.
- Recommendations by the Secretary on 1) how CMS should obtain access to the necessary data on SES (if the data is not already being collected) and how to address barriers to access to the data, and 2) how CMS should account for SES in quality, resource use, and other measures and in payment adjustments based on those measures, if Studies A and B find a relationship between SES and quality and resource use measures.

This Report presents the results of Study B, using both Medicare and non-Medicare data sources to measure beneficiaries' social risk factors, along with additional analyses of how the federal government can help providers and health plans provide high-quality care to all Medicare beneficiaries. In addition, this Report outlines policy options that could potentially address social risk factors, and quantifies the impact of these options on providers serving beneficiaries with social risk factors. It also expands on the data findings requested by the Congress in Study C. As required by statute, this Report provides evidence and recommendations related to the issue of accounting for social risk factors in Medicare's VBP programs specifically. However, since VBP programs are only one part of the larger goal of providing high-value, patient-centered care, it also addresses the current state and future options for more comprehensively addressing and integrating social risk factors within the Medicare program and the broader health care system.

I. Value-based Purchasing and Social Risk Factors

Medicare's payment programs now broadly link the quality and efficiency of health care to payment. For example, Medicare's Hospital Value-based Purchasing Program (HVBP) that began in fiscal year 2013 (October 2012) reduces or increases hospitals' Medicare payments for inpatient services based on performance on processes, outcomes, efficiency, and patient experience. In addition, the Hospital Readmissions Reduction program (HRRP) and the Hospital-Acquired Conditions Reduction Program (HACRP) reduce payments to hospitals based on their performance on quality measures. Additional VBP programs are underway or in development in nearly all Medicare settings, including the ambulatory domain for physicians and dialysis facilities, in the post-acute setting for skilled-nursing facilities and in home health agencies. In addition, Medicare Advantage (MA) Star Ratings affect quality bonus payment determinations and rebate retention allowances.

To drive delivery system transformation, the Center for Medicare & Medicaid Innovation (CMMI) is authorized by statute to develop and test innovative delivery system and payment models expected to reduce program costs while preserving or enhancing quality of care. Alternative payment models (APMs), whether CMMI models or permanent programs such as the Medicare Shared Savings Program in

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[a] Improving Medicare Post-Acute Care Transformation (IMPACT) Act of 2014, Section 2(d)(1)(C)

Medicare, vary substantially, but these payment models generally offer incentive payments to provide high-quality and cost-efficient care.

The movement to value-based payment has fueled current interest in social risk factors. Indeed, as payments are now tied to health outcomes, activity within the health care delivery system aimed at addressing non-medical factors that can affect health outcomes has grown rapidly. Delivery system transformation has created challenges and opportunities for addressing these social risk factors by:

1. Raising important policy issues concerning whether and how to adjust quality measures and VBP performance scores for non-clinical patient characteristics—specifically social risk factors
2. Raising awareness that non-medical factors such as social risk play a significant role in health outcomes and that the success of VBP may require integrating social services as an important component of coordinated, person-centered care

The first of these issues is related to balancing VBP's incentives for quality improvement with fairness to providers and plans serving beneficiaries who present challenges in achieving better outcomes—particularly beneficiaries at social risk. The clear intention of VBP is to reward high-quality care and penalize poor quality.[10] VBP focuses on payment and delivery models that better coordinate and integrate care, a potentially powerful tool for improving outcomes for high-risk individuals.[11] On the other hand, the unique characteristics of socially at-risk people may mean that they are more likely experience worse outcomes, even if the best care possible is provided to them.[12] Thus, it may be more difficult for plans or providers that treat a disproportionate share of socially at-risk individuals to perform as well as their counterparts treating more advantaged individuals others even if they offer objectively similar or better quality-of-care.[13] If providers, especially those who serve socially at-risk beneficiaries, feel that they are more likely to be penalized under VBP due to the population they serve, they may be discouraged from joining VBP models with greater accountability.[14-17]

The second issue recognizes that not addressing these concerns head-on could jeopardize the ability to achieve VBP's policy objectives. The emphasis on creating a high-value health care delivery system has renewed awareness that medical care is only one of many factors that directly affect health outcomes. Indeed, some argue that social risk factors may play a larger role in this respect than medical care.[18] Yet providers may be discouraged from investing in infrastructure to address social risk factors at the community level if initiatives to transform delivery systems do not account for the additional resources, tools, and community partnerships needed to address social risk factors and improve health outcomes and population health.[19,20]

A recent survey, for example, found that nearly three-quarters of hospitals do not have dedicated funds to address the social needs of target populations.[21] For current Medicare APMs, Medicare payment formulas established by Congress limit which services can be paid. At the same time, broad population health models will need to engage multi-sectoral stakeholders, including public health agencies, health care providers, social service providers, and community organizations, to comprehensively address policies and community infrastructure needs that influence health outcomes. Strategies for better incorporating social risk factors into care regimens include: better coordination among health care providers, coordination between health care and social service providers, incorporating community resources, and rethinking traditional insurance benefit packages. All these strategies will require a new and improved data infrastructure—that is, one that collects and standardizes social risk data elements and makes them easily available across plans, providers, and community participants.

II. Policy Questions and Goals

This Report to Congress is intended to address and inform both of the important policy issues described above. The research, policy analyses, and recommendations contained in the Report are guided by the following three policy questions:

1. Should some or all of Medicare's VBP programs account for social risk by adjusting measures and/or payment?
2. Should HHS routinely collect more extensive and detailed data on beneficiaries' social risk factors than is currently available?
3. How can HHS achieve better outcomes for all Medicare beneficiaries by facilitating the ability of providers and communities to address social risk factors and integrate health and social services?

This Report reflects the requirements of the IMPACT Act, both the studies and recommendations, and the rapidly emerging issues and evidence available since the completion of Study A. The first two policy questions respond directly to the requirements of the IMPACT Act. The third question, while not explicitly required, speaks to the more comprehensive issues of addressing social risk factors as part of a system that provides high-value, patient-centered care.

This Report will address these questions with the following goals in mind:

1. Improve overall health care quality and outcomes for Medicare beneficiaries
2. Foster health equity throughout the health care delivery system

III. Structure of This Report

This Report is divided into four sections. Section One introduces the Report. Section Two presents quantitative analyses of the role of social and medical risk in quality measures and VBP programs using new data sources. Section Three includes qualitative analyses of emerging areas in addressing social risk in the Medicare program. Section Four summarizes findings and recommendations.

In the first section, following this Introduction, Chapter 2 provides a comprehensive description and definition of social risk factors ("social determinants of health"). Chapter 3 sets the stage for the new analyses by reviewing Study A's findings and identifying unanswered questions that this Report will address.

Section Two, the quantitative analyses, begins with a discussion of the research questions and analytic approach employed to address them. It then presents results from quantitative analyses of additional data sources for both social and functional risk data. This section builds directly on work from Study A, adding new functional and social risk factors not evaluated in the first Report. This second section also presents a framework for thinking about social and medical risk in Medicare's VBP programs.

The quantitative analyses described in Section Two involve: 1) functional risk factors using Medicare claims, 2) social and medical risk factors using the Medicare Current Beneficiary Survey (MCBS), and 3) planned analyses of the American Community Survey (ACS) that could not be included in this Report as the data was not yet available at the time of submission. These analyses address the following research questions based on those examined in Study A:

1. What is the association between social risk factors, medical risk factors, and patient outcomes on Medicare quality and resource use measures?
2. What is the association between social risk factors, medical risk factors, and provider performance on Medicare quality and resource use measures?
3. How would accounting for social risk or unmeasured medical risk affect provider performance on quality and resource use measures and in quality programs?

Section Three on addressing social risk in the Medicare program focuses on the policy question of how HHS can support the provision of quality care for socially at-risk beneficiaries. It considers two important areas: social risk data and practices to address beneficiaries' social risk factors. It includes case studies of how electronic health records (EHR) vendors are incorporating social risk factors into their products and also how MA health plans are addressing beneficiaries' social needs. This section also includes responses submitted to a request for information on provider and health plan approaches to improving care for Medicare beneficiaries with social risk factors.

The last section, Section Four, uses the findings throughout this Report for policy analyses and recommendations. The section's first chapter presents the criteria used to analyze options for accounting for social risk in Medicare's VBP programs. The next chapter includes recommendations for addressing the policy questions presented above, guided by the three-part Strategy for Accounting for Social Risk in Medicare's VBP Programs introduced in Study A. The final chapter summarizes all the Report's findings and lays out next steps for an HHS-wide strategy.

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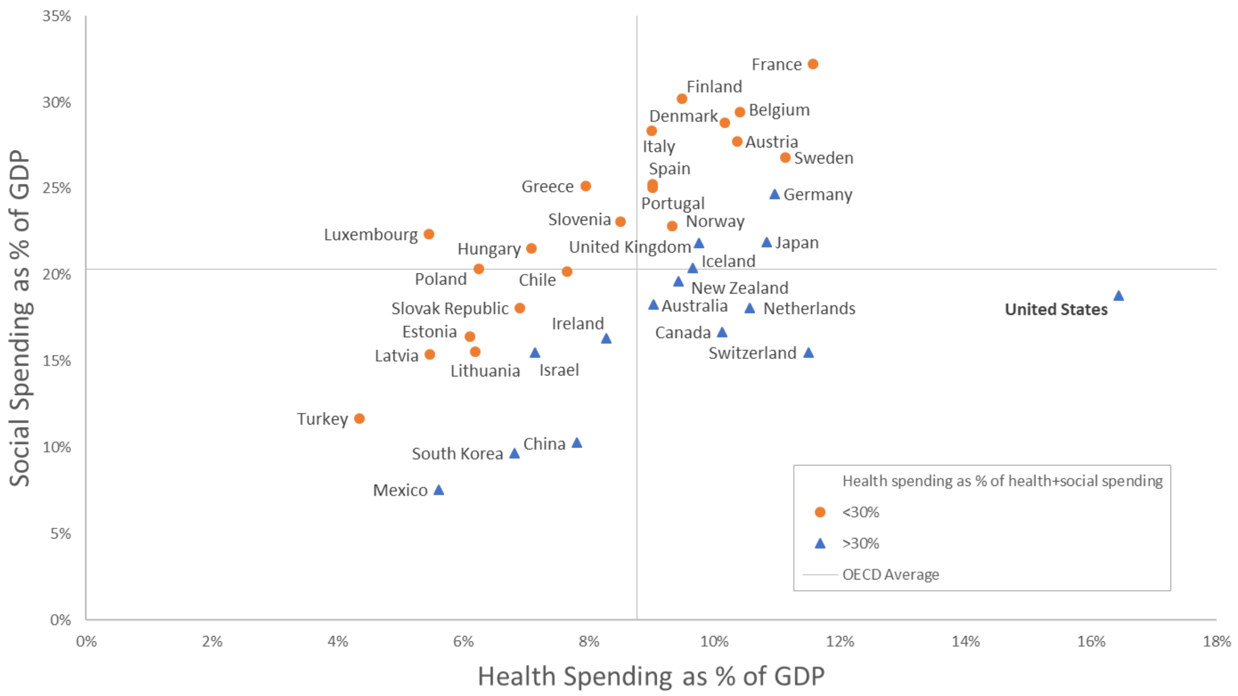
Chapter 2. Social Risk and Health Care

The United States, despite having many relatively worse health outcomes, including life expectancy, has higher spending on health care, as a percent of gross domestic product (GDP) than all other high-income countries belonging to the Organisation for Economic Cooperation and Development (OECD) (Figure 2.1).[1]

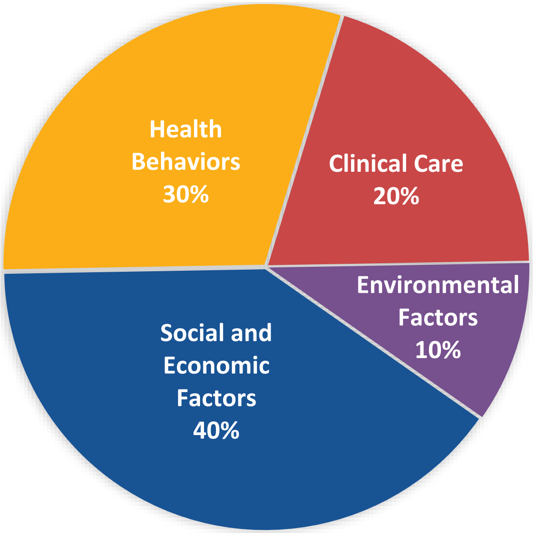
Figure 2.1. Health and Social Spending for OECD Countries



Notes: From OECD published data for 2014. Social spending includes cash benefits, direct in-kind provision of goods and services, and tax breaks with social purposes. Health spending includes health services and administration. OECD=Organisation for Economic Co-operation and Development.

Recent efforts to quantify the contributions of different factors to health outcomes have suggested that social and economic factors may play a larger role than clinical care. For example, the County Health Rankings weights social and economic factors as the largest contributor to overall length and quality of life at 40%, while clinical care (both quality and access) contributes only 20% (Figure 2.2).

Figure 2.2. Relative Contribution of Factors to Health Outcomes



Source: Booske BC, Athens JK, Kindig DA, Park H, Remington PL. Different Perspectives for Assigning Weights to Determinants of Health. University of Wisconsin: Population Health Institute; 2010 February. http://www.countyhealthrankings.org/sites/default/files/differentPerspectivesForAssigningWeightsToDeterminantsOfHealth.pdf.

Such findings suggest that addressing the relatively high spending and worse outcomes in the United States will require better aligning health and human services programs by thinking differently about health care payment and health service delivery.[1] One of the Department's priorities is value-based care, or transforming the health care system to one that pays for outcomes and health, rather than only for services delivered.[2] Value-based care includes addressing factors beyond health services that contribute to health outcomes. Efforts to shift the current health care reimbursement system from fee-for-service to one driven by value and health outcomes have been underway for years in the U.S., starting with quality reporting and pay-for-performance programs. The Medicaid program's options for home and community-based services in lieu of institutional care, beginning in 1981, to enable the elderly and the disabled to continue to live in their communities is another example of this shift. Additional support came when the Improving Medicare Post-Acute Care Transformation (IMPACT) Act of 2014 required studies evaluating the effect of individuals' socioeconomic status (SES) on quality measures and measures of resource use under the Medicare program.

Overall, however, the current health care delivery system still focuses largely on medical care rather than the role of social and economic factors on either access to care or health outcomes. Public programs have rules about what services can be reimbursed using federal dollars: historically, health care expenditures have been limited to treating illness and injury plus certain preventive services.

I. Defining Social Risk

The terms "social determinants of health" and "social risk factors" both describe the social and economic factors that may affect access to care or health outcomes, although there are numerous definitions of these terms, some more widely used than others. Socioeconomic status (SES) is typically included as one of the many social risk factors, along with factors such as social support, community context, and the built environment.

A. Social Determinants of Health

The most common definition of "social determinants of health" comes from the World Health Organization's (WHO's) Commission on Social Determinants of Health in 2008. The Commission defines social determinants of health as "The conditions in which people are born, grow, live, work, and age" and include three types of determinants: (1) socioeconomic and political context; (2) structural determinants and socioeconomic position; and (3) intermediary determinants (health behaviors and physiological factors; health systems).[3]

The U.S. Centers for Disease Control and Prevention (CDC) and Healthy People 2020, a government-led national effort to set goals to improve Americans' health, use a slightly modified version of the WHO definition. The CDC defines social determinants of health as "conditions in the places where people live, learn, work, and play" and includes five determinants: (1) economic stability; (2) education; (3) social and community context; (4) health and health care; and (5) neighborhood and built environment.[4] Healthy People 2020 uses this definition: "Conditions in the environments in which people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks" with the same five determinants as the CDC.[5]

In a recent article on definations related to social determinants of health, Alderwick and Gottlieb differentiate social determinants from other related terms with the idea that "Social determinants shape health for better or worse."[6] In this sense, social determninants include both social risk factors (discussed below) and protective factors (community resources, resilience, hardiness, and other factors) that reduce or mitigate social risk factors. Protective factors exist in every community and provide foundational resources to build upon or improve community social health.

B. Social Risk Factors

An alternative but less common term "social risk factors," defined in the National Academy of Sciences, Engineering, and Medicine (NASEM) Committee on Accounting for Socioeconomic Status in Medicare Payment Programs' report "Accounting for Social Risk Factors in Medicare Payment: Identifying Social Risk Factors." This report defines social risk factors as "a set of constructs that capture the key ways in which social processes and social relationships could influence key health-related outcomes." This report lists five factors: (1) socioeconomic position; (2) race, ethnicity and cultural context; (3) gender; (4) social relationships; (5) residential and community context.[7] The first of these factors, "socioeconomic position," includes measures of income, wealth, education, and occupation and is used instead of the term "socioeconomic status."[7]

The NASEM report suggests using the term "social risk factors" to "broadly characterize a set of constructs that capture the key ways in which social processes and social relationships could influence key health-related outcomes in Medicare beneficiaries."[7] This term better recognizes the role of individual resilience, beliefs, attitudes, values, choices, and behaviors in health outcomes, in addition to the societal factors that may be less subject to an individual's control. As such, social factors alone do not determine health outcomes, and this Report uses the term "social risk factors" in preference to the term "social determinants of health."

Similarly, in their article Alderwick and Gottlieb define social risk factors as "specific adverse social conditions that are associated with poor health" at the individual level.[6] They and others further define social needs as the risk factors that an indivudal prioritizes to address.[6,8]

C. Socioeconomic Status

The Improving Medicare Post-Acute Care Transformation (IMPACT) Act of 2014 required studies evaluating the effect of social risk factors including individuals' socioeconomic status (SES) on quality measures and measures of resource use under the Medicare program. Socioeconomic status is typically included as one of the many social risk factors, along with factors such as social support, community context, and the built environment. The NASEM report used the term "socioeconomic position" and includes measures of income, wealth, education, and occupation.[7]

D. Conceptual Models

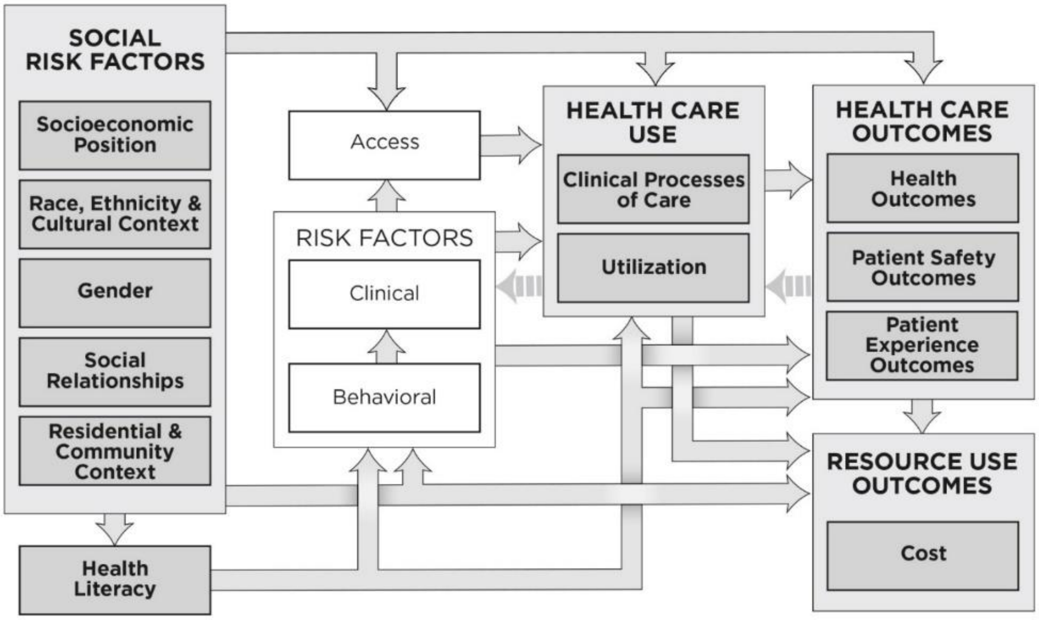
Different conceptual models may be used to represent the role of social risk in health outcomes. These models are not necessarily alternatives to the definition of social risk described above, but rather complementary ways to understand how social risk influences individuals and their health.

Although these models are not explicitly referred to in later chapters of the Report, they are important context in understanding why and how social risk factors are related to health outcomes. Each of these models is evidence-based and describes a different potential pathway between social risk factors and health outcomes. Therefore, at the individual-level, a social risk factor may influence a person's health through one or more of the pathways described in the models. The analytic sections of this Report will evaluate the relationship between specific social risk factors and health outcomes, but not necessarily the pathway of this relationship.

1. Health Care Access Model

Models of health care access, often include social risk and the NASEM used one such model in their report (Figure 2.3). Using this framework, social risk factors such as socioeconomic position, gender, and social relationships influence an individual's clinical and behavioral risk factors. These social risk factors, together with the individual's decisions and behaviors, affect that individual's health care utilization, which in turn leads to specific health outcomes.[7]

Figure 2.3. Health Care Access Model for Social Risk Factors



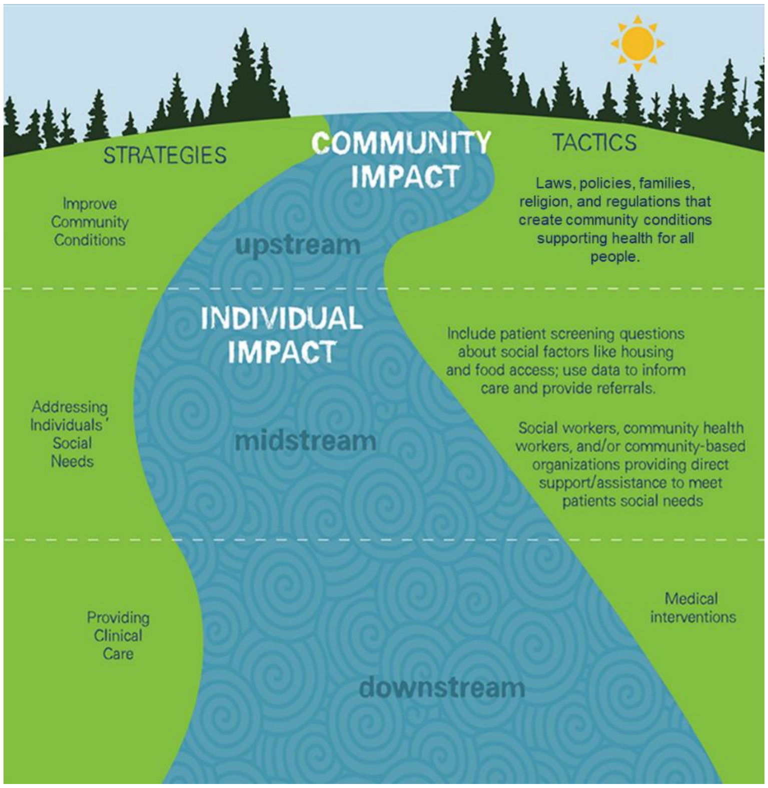
Source: National Academies of Sciences, Engineering, and Medicine. Accounting for Social Risk Factors in Medicare Payment: Identifying Social Risk Factors. Washington, DC: The National Academies Press; 2016 July 12. https://www.nap.edu/catalog/21858/accounting-for-social-risk-factors-in-medicare-payment-identifying-social.

For example, income, a component of the socioeconomic position risk factor (first column of the diagram), may affect an individual’s ability to pay for health services. This limited ability affects the person’s access to care (second column of the diagram) as they cannot get unaffordable health services (third column of the diagram). Undiagnosed conditions or missed treatments may in turn lead to poor health outcomes (last column of the diagram).

2. Ecologic Model

Social risk factors are often categorized as “upstream” or “downstream” determinants of health depending on how they are assessed (Figure 2.4). Downstream determinants (health services such as treatment of disease) and midstream determinants (addressing an individual’s social needs such as by providing healthy meals or transportation) are localized factors that can be addressed at the individual level, with a direct relationship to an individual’s health. Upstream determinants (such as air quality or availability of low-income housing) are targeted at multiple individuals or communities.[9] Upstream determinants have a smaller effect on each individual’s health but affect more individuals overall.[5,10] Factors in the ecologic model can be either social risk factors or protective factors that mitigate social risk.

Figure 2.4. Ecologic Model for Social Risk Factors



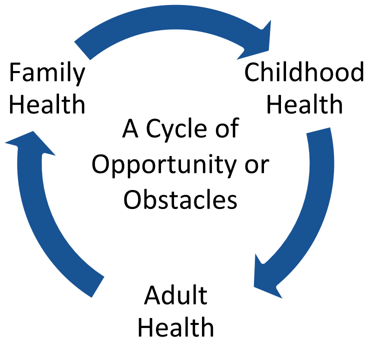
Modified from: Castrucci B, Auerbach J. Meeting Individual Social Needs Falls Short of Addressing Social Determinants of Health. Health Affairs Blog. January 16, 2019. (Accessed June 14, 2019, at https://www.healthaffairs.org/do/10.1377/hblog20190115.234942/full/.)

As opposed to the health care access model, the ecologic model does not show a multi-step pathway between social risk factors and health outcomes, but instead categorizes determinants or interventions by how targeted or diffuse they are. For example, housing instability can be addressed through various interventions. Selecting appropriate medications that do not need to be refrigerated for a homeless beneficiary would be a targeted, downstream intervention addressing an individual's need. Providing temporary housing after hospitalization for homeless beneficiaries is a more midstream, but still fairly targeted intervention. However, changing zoning regulations to increase low-income housing in a community is diffuse, upstream intervention addressing the needs of the entire community.

3. Life Course Model

A final conceptual model to understand social risk factors is the life course framework. Under this model, an individual's current health is influenced by the aggregate of that individual's social risk over the lifespan (Figure 2.5). This includes childhood and parental factors, adult factors, and family in adulthood.[11]

Figure 2.5. Life Course Model for Social Risk Factors



Adapted from: Braveman P, Egerter S, Williams DR. The Social Determinants of Health: Coming of Age. Annual Review of Public Health 2011;32:381-98. doi:10.1146/annurev-publhealth-031210-101218.

For example, early childhood experiences are associated with physical, behavioral, and cognitive development, which in turn influence educational attainment. An individual's educational attainment is associated not only with their own health, but also the environment of their children, beginning the cycle again.

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Chapter 3. IMPACT Study A

This chapter provides an overview of the specific tasks requested by Congress for Study A, submitted in the December 2016 Report to Congress. By reviewing this study's findings and the strategies for addressing social risk it identified, this chapter provides context for understanding how this Report (Study B) addresses remaining questions.

I. Study A

Study A was submitted as a Report to Congress in December 2016. For that Report, the Assistant Secretary for Planning and Evaluation (ASPE) was tasked with using existing Medicare data to evaluate the role of socioeconomic status (SES) in Medicare's value-based purchasing (VBP) programs across care settings.

One of the first steps ASPE took under the IMPACT Act work was to ask the National Academies of Sciences, Engineering, and Medicine (NASEM) to define and conceptualize socioeconomic status for the purposes of Study A and Study B (this Report). The NASEM convened a panel of experts in the field, who, after conducting an extensive literature review, concluded, as explained more fully in Chapter 2, that the appropriate framework would be that of social risk factors instead of socioeconomic status. Social risk factors include socioeconomic position, race, ethnicity, gender, social context, and community context.[1] These factors are discussed at length in the Study A Report and the NASEM reports.[1]

Study A evaluated the role of social risk across the nine VBP programs that existed when the Report was submitted. Available Medicare data included the following social risk factors: 1) dual enrollment in Medicare and Medicaid (a marker for low income), 2) residence in a low-income area, 3) Black race, 4) Hispanic ethnicity, and 5) residence in a rural area. Disability was also examined because it is related to many social risk factors, was available in claims data, and was already used in some Medicare payment calculations. Providers[a] in the top quintile for proportion of their beneficiaries with each social risk factor (for example, the physicians with the highest proportion of dually enrolled beneficiaries) were considered "safety-net" providers in Study A.

A. Findings

Study A had two main findings.

FINDING 1: Beneficiaries with social risk factors had worse outcomes on many quality measures, regardless of the providers they saw, and dual-enrollment status was the most powerful predictor of poor outcomes.

Beneficiaries with social risk factors had poorer outcomes on many quality measures, including process measures (e.g., cancer screening), clinical outcome measures (e.g., diabetes control, readmissions), safety (e.g., infection rates), and patient experience measures (e.g., communication from doctors and nurses),

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[a] Note that in this Report the term "providers" is used to indicate physicians, hospitals, dialysis facilities, nursing facilities, Medicare Advantage contracts, etc.

as well as higher resource use (e.g., higher spending per hospital admission episode). This finding remained true even when comparing beneficiaries at the same hospital, health plan, accountable care organization (ACO), physician group, skilled nursing facility, or home health agency. Dual enrollment in Medicare and Medicaid was typically the most powerful predictor of poor performance among those social risk factors examined, although the relationship between dual enrollment and outcomes varied across quality and resource use measures. For the most part, these findings were moderate in size (dually enrolled beneficiaries had 10-30% increase in poor outcomes like admission, readmission, and mortality) and persisted after risk adjustment, as well as across care settings, measure types, and programs.

FINDING 2: Providers that disproportionately served beneficiaries with social risk factors tended to have worse performance on quality measures, even after accounting for their beneficiary mix. Under all five value-based purchasing programs in which penalties were assessed in 2016, these providers experienced somewhat higher penalties than did providers serving fewer beneficiaries with social risk factors.

In every care setting examined, providers that disproportionately cared for beneficiaries with social risk factors tended to perform worse than their peers on quality measures. Some of these differences were driven by beneficiary mix, but some persisted even after adjusting for beneficiary characteristics. As a result, safety-net providers were more likely to face financial penalties across all five operational Medicare VBP programs in which penalties were assessed, including programs in the hospital, physician group, and dialysis facility settings. Medicare Advantage (MA) organizations caring for more socially at-risk beneficiaries were also less likely to receive bonuses. The single exception was that ACOs with a high proportion of dually enrolled beneficiaries were more likely to share in savings under the Medicare Shared Savings Program, despite slightly worse quality scores.

Study A examined several options for accounting for social risk in VBP measures and programs, including risk adjusting measures and assigning penalties within peer groups. Although the social risk factor of dual enrollment was generally a statistically significant predictor of poor outcomes, adding dual enrollment to measure risk adjustment had a small effect on average penalties or bonus payments for most VBP programs. Assigning penalties within peer groups was more effective at equalizing payment adjustments between safety-net and other providers.

Importantly, in every setting, be it hospital, health plan, ACO, physician group, skilled nursing facility, or home health agency, some providers serving a high proportion of beneficiaries with social risk factors did achieve high levels of performance. This suggests that high performance is feasible with the right strategies and supports.

B. Strategies and Considerations

The Department's goal is to develop VBP programs under which *all* Medicare beneficiaries receive the highest quality health care services. In the context of the findings from Study A, it is clear that doing so requires a multipronged approach. Proposed solutions that only account for social risk in quality measures or program adjustments without considering the broader delivery system and policy context are unlikely to fully mitigate the relationship between social risk factors and outcomes. Leveraging VBP programs carefully was deemed critical to enhancing, rather than threatening, access to and provision of high-quality care for beneficiaries with social risk factors. To this end, the Department proposed three strategies for Accounting for Social Risk in Medicare's VBP Programs (Figure 3.1):

Figure 3.1. Strategies for Accounting for Social Risk in Medicare's Value-Based Purchasing Programs

The first strategy requires that performance on quality and outcomes be **measured and reported specifically for beneficiaries with social risk factors** to allow policymakers and clinical leaders to identify, track, and address disparities in care.

The second strategy is to set **high, fair, quality standards** for all beneficiaries. Whether the "fairest" standard adjusts for social risk will depend on the type of measure and how the considerations outlined earlier apply to that particular measure. Achieving this second goal also requires studying all measures to determine whether accounting for frailty, medical complexity, functional status, or other factors might improve their ability to fairly and accurately assess provider performance.

The third strategy—rewarding and supporting better outcomes—stems from the recognition that meeting quality standards, particularly for outcome measures, may be harder for beneficiaries with social risk factors, who face specific challenges to achieving good health outcomes.

Implementing these strategies requires:

a) Providing **specific payment adjustments to reward achievement and/or improvement for beneficiaries with social risk factors,** and

b) Where feasible, **providing targeted support** for providers who disproportionately serve them.

Leveraging the power of VBP to provide specific payment adjustments to reward providers for successfully achieving high quality and/or good health outcomes in beneficiaries with social risk factors may provide important incentives to focus on these individuals and help offset any real or perceived disincentives to caring for them. In addition, providing targeted support, for example through quality improvement programs designed specifically for beneficiaries with social risk factors, is critical to ensuring that all beneficiaries can have the best health outcomes possible. Ensuring that current base payments are adequate to support high-quality care for beneficiaries with social risk factors is another key component.

Study A included specific considerations for applying each these strategies to Medicare payment programs, as described below. Note that these are general considerations and not all apply to each program reviewed.

STRATEGY 1: Measure and Report Quality for Beneficiaries with Social Risk Factors

Consideration 1. Consider enhancing data collection and developing statistical techniques to allow measurement and reporting of performance for beneficiaries with social risk factors on key quality and resource use measures.

The ability to measure and track quality, outcomes, and costs for beneficiaries with social risk factors over time is crucial as policymakers and providers seek to reduce disparities and improve care for these groups. However, for this to be feasible, two issues must be addressed: first, data would need to be collected on enough beneficiaries for performance assessment by subgroup; second, statistical techniques to allow calculation for subgroups would need to be developed.

Consideration 2. Consider developing and introducing health equity measures or domains into existing payment programs to measure disparities and incentivize reducing them.

Quality measures help systems, providers, and accountable entities prioritize areas for particular focus, allowing specific measures targeting equity within existing value-based purchasing programs to encourage providers to focus on reducing disparities. These measures might include adding a health equity measure or domain to existing programs.

Consideration 3. Prospectively monitor the financial impact of Medicare payment programs on providers disproportionately serving beneficiaries with social risk factors.

Many of the programs examined in Study A were, at the time, new or evolving. Prospectively monitoring the financial impact of Medicare payment programs on providers disproportionately serving beneficiaries with social risk factors is critical as the programs continue to change. One example of such a prospective study is the section in the first Report examining the all-cause hospital readmission measure, which the Hospital Readmissions Reduction Program (HRRP) proposed for implementation.

These analyses demonstrated that moving to such a measure, in the absence of other program changes, could disproportionately impact the safety net. Similarly, analyses in Study A examining changes to the Hospital-Acquired Condition Reduction Program (HACRP) demonstrated that these may negatively impact safety-net hospitals. These types of analyses are important for policymakers to consider as Medicare's value-based purchasing programs continue to evolve.

STRATEGY 2: Set High, Fair Quality Standards for All Beneficiaries

Consideration 1. Measures should be examined to determine if adjustment for social risk factors is appropriate; this determination will depend on the measure and its empirical relationship to social risk factors.

While there is no all-encompassing approach to determining whether measures should be adjusted for social risk, these decisions should consider the benefits and concerns of adjustment discussed above. Additionally, it is important to consider empirical evidence on the relationship between the social risk factor and the outcome, including any evidence that need or complexity may be driving differences in performance, or if the differences in performance may be related to true differences in the quality of care delivered to beneficiaries with social risk factors. Such decisions should be continuously evaluated as new data on social risk and better data on medical risk become available and as new measures are introduced into the programs.

Consideration 2. The measure development community should continue to study program measures to determine whether differences in health status might underlie the observed relationships between social risk and performance, and whether better adjustment for health status might improve the ability to differentiate true differences in performance between providers.

Some of the observed relationship between social risk factors and performance on quality measures may result from underlying differences in medical complexity, frailty, disability, and/or functional status of beneficiaries. For example, dually enrolled beneficiaries are more likely to have poor functional status, and therefore may be more likely to be readmitted after a hospitalization. However, data on these factors are not broadly available and will require further development. To make VBP programs as accurate as possible, and to avoid unfairly penalizing providers that serve socially or medically complex beneficiaries, both quality and resource use measures should be continuously improved to account for differences in these and other components of medical risk.

STRATEGY 3: Reward and Support Better Outcomes for Beneficiaries with Social Risk Factors

Consideration 1. Consider creating targeted financial incentives within value-based purchasing programs to reward achievement of high-quality and good outcomes, or significant improvement, among beneficiaries with social risk factors.

Systems, providers, and accountable entities who achieve high-quality outcomes and/or improvement in health outcomes for beneficiaries with social risk factors should be rewarded. This could be achieved by leveraging the power of value-based purchasing within existing VBP programs to provide specific payment adjustments to reward such providers, providing important incentives for achieving high-quality and/or improved health outcomes and helping offset any real or perceived disincentives under VBP programs to caring for beneficiaries with social risk factors. Such opportunities would also highlight the need to focus on and improve outcomes for at-risk groups.

Consideration 2. Consider using existing or new quality improvement programs to provide targeted support and technical assistance to providers that serve beneficiaries with social risk factors.

Specific support and technical assistance programs for providers serving at-risk populations would serve both to reduce disproportionate penalty burdens on these providers, and more importantly, to improve care for the most socially at-risk Medicare beneficiaries.

Consideration 3. Consider developing demonstrations or models focusing on care innovations that may help achieve better outcomes for beneficiaries with social risk factors.

Demonstrations and models are promising strategies for identifying and testing innovative strategies that may meet the unique needs of beneficiaries with social risk factors. These include the demonstration programs that focus on coordinating benefits between Medicare and Medicaid, supplemental benefits in the Medicare Advantage program, and CMMI's Accountable Health Communities model, and other models.

Consideration 4. Consider further research to examine the costs of achieving good outcomes for beneficiaries with social risk factors and to determine whether current payments adequately account for any differences in care needs.

It might require relatively more resources to achieve good outcomes for beneficiaries with social risk factors, but how much and what type of resources is poorly understood. Future research should determine whether current payments, typically based only on differences in medical risk, adequately account for these differences in care needs. Note that this is a different consideration than additional VBP adjustments as outlined in Consideration 1 above – this consideration instead refers specifically to whether providers should be paid more to care for beneficiaries with social risk factors via higher base payments, regardless of performance. Disproportionate Share Hospital payments in the hospital setting are a current example of such add-on payments for social risk, as are higher payments in Medicare Advantage contracts to provide care for beneficiaries with social risk factors. However, because no such provision currently exists for physicians in the outpatient setting, skilled nursing facilities, dialysis facilities, and other care settings, the costs and value in doing so should be studied.

C. Unanswered Questions

The scope of Study A (using existing Medicare data to evaluate the role of social risk on Medicare's VBP programs), left some unanswered questions that are important to developing the Secretary's recommendations to account for social risk as required by the IMPACT Act.

1. What is dual-enrollment status really measuring?

Study A found that dual-enrollment status is the strongest predictor of poor outcomes among the social risk factors evaluated. However, only a few social risk factors (dual enrollment, residence in a low-income area, Black race, Hispanic ethnicity, and residence in a rural area) are available in existing Medicare data. Other social risk factors that are not available in Medicare data may be both correlated with dual enrollment and predictors of poor outcomes in quality and resource use measures. In this case, the observed effect of dual-enrollment status may be, in part, capturing these other unmeasured social risk factors.

Study A also correlated dual enrollment with higher medical risk, including medical complexity. Although all the measures evaluated in Study A accounted for some medical risk factors (particularly comorbidities), current risk adjustment rarely includes medical complexity or functional risk. As with the unmeasured social risk factors, the observed effect of dual-enrollment status may capture unmeasured medical complexity or functional risk (that is, physical or cognitive impairments that impair functioning).

It is important to determine whether some of the observed difference in outcomes for dually enrolled beneficiaries could be attributable to unmeasured medical or social risk factors. The study described in this Report uses expanded measures of both medical and social risk—the latter from data not employed for Study A.

2. What is the relationship between social and medical risk?

Some of the analyses in Study A, specifically the analysis of the 30-day Medicare Spending per Beneficiary (MSPB) measure included in the Hospital Value-Based Purchasing (HVBP) program, evaluated both social risk factors and medical complexity (that is, having multiple medical risk factors). In the MSPB measure, socially at-risk beneficiaries (as measured by dual enrollment) were more likely to be medically complex, and adjusting for medical complexity reduced the effect of dual enrollment on episode spending.

Because medical complexity and functional risk may be more prevalent in socially at-risk beneficiaries, better understanding of the association between social and medical risk may help in evaluating the independent role of social risk.

3. What social risk data are currently being collected? What additional measures of social risk are available?

Study A focused on existing Medicare data, which include only a limited number of social risk factors. Because providers and health plans may collect additional social risk information about beneficiaries, this Report asks what data are being collected and how the data are being used to improve care for socially at-risk beneficiaries. The Report also raises the question of whether additional measures of social risk are available, and if so, how these factors are being captured.

4. What can be learned from current efforts to address social risk?

In Study C, the NASEM reviewed the literature on strategies employed by providers serving socially at-risk beneficiaries and identified six promising practices for improving care for socially at-risk beneficiaries. As described in the 2016 Report, these practices are:[2]

- Commitment to health equity: value and promote health equity and hold yourself accountable
- Data and measurement: understand your population’s health, risk factors, and patterns of care
- Comprehensive needs assessment: identify, anticipate, and respond to clinical and social needs

- Collaborative partnerships: collaborate within and across provider teams and service sectors to deliver care
- Care continuity: plan care and care transitions to prepare for patients' changing clinical and social needs
- Engaging patients in their care: design individualized care to promote the health of individuals in the community setting populations

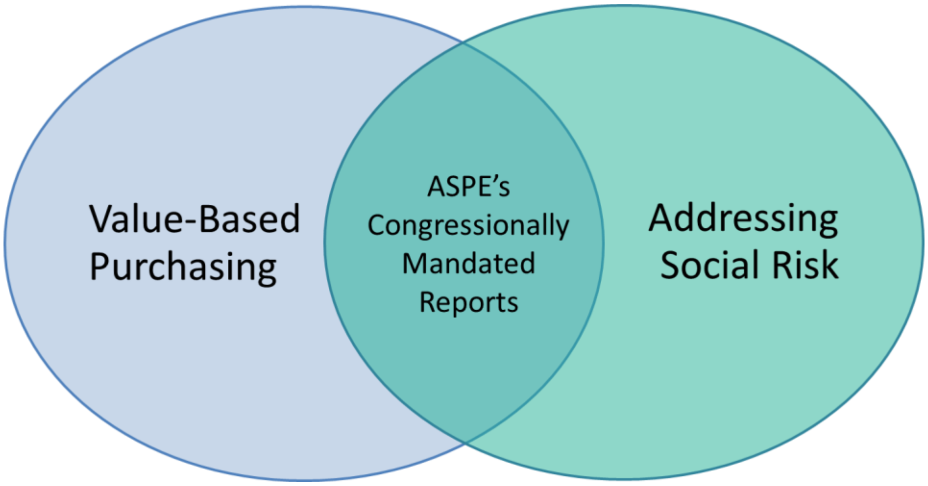
This Report addresses these unanswered questions using both quantitative (in Section Two) and qualitative (in Section Three) analyses. It builds on the 2016 NASEM report by including efforts to address social risk that have evolved since that report and looks at specific interventions to address beneficiaries' social risk factors in the health care system by both considering the data that providers and plans are collecting on social risk as well as public perspectives on collecting and using social risk factor data.

In addition to these unanswered questions, there has been a discussion about social risk factors and considerable progress toward addressing them since the publication of the first Report in 2016. These developments have shifted the policy discussion and policy questions from focusing solely on whether quality and resource use measures should be adjusted for social risk to how HHS and value-based transformation efforts can support addressing social risk factors to improve health outcomes.

II. Progress since Study A

Since the December 2016 completion of Study A, interest in social risk has expanded rapidly. At the same time, VBP programs have expanded into additional care settings and payment models. The task given to ASPE—to address the role of social risk in Medicare's VBP programs and to create a high-value health care delivery system—sits at the intersection of these two trends (Figure 3.2).

Figure 3.2. Intersection between Value-Based Purchasing and Addressing Social Risk



In the VBP space, there is a growing literature evaluating how well programs have achieved their objectives and whether they have led to unintended consequences.[3-6] These issues represent an active area of research and discussion and will continue to do so as more VBP programs are developed and existing programs mature. In addition to addressing social risk, these issues are important to consider when contemplating changes to existing programs. While beyond the scope of this Report, in which ASPE was asked to evaluate the role of social risk on quality measures and resource use measures and payment adjustments based on those measures, future work is needed to better understand the success of VBP programs in general.

Despite substantial movement in the discussion and policies involving the role of social risk in Medicare's VBP programs, the question of how to account for social risk in these programs remains unresolved. In this area, much of the focus has been on the HRRP because it was one of the first VBP programs implemented, has potentially large penalties (up to 3% of base payments), and includes only one outcome (readmissions). Consistent with other published studies, Study A found that socially at-risk beneficiaries were more likely to be readmitted for the conditions included in the HRRP, and that safety-net hospitals treating more of these beneficiaries were more likely to face HRRP penalties.[7-14] After the program was implemented, these disparities lessened as readmission rates declined faster for socially at-risk beneficiaries and safety-net hospitals, but still remained higher than for other groups.[15-17] However, because penalties are assessed based on a hospitals' relative performance, safety-net hospitals were more likely to receive penalties and had greater increases in penalties than other hospitals during the program's first few years.[18] Such findings have drawn concern that penalties to safety-net hospitals may reduce their already small financial margins, making it harder to improve quality and avoid future penalties.[19]

Since safety-net hospitals faced higher penalties than other hospitals in the first years of the HRRP, several options have been proposed to reduce their penalty burden, most commonly by including social risk factors in the readmission measures' risk adjustment. Study A found that including one social risk factor, dual enrollment, in risk adjustment had a small effect on hospitals' readmission rates and a smaller effect on HRRP penalties, consistent with other published research.[20] Adjusting for neighborhood-level social risk, rather than beneficiary social risk, has also been evaluated and reduces the disparity in readmissions at the beneficiary level, especially for those living in the most socially at-risk neighborhoods.[21,22] Similar to adjusting for dual-enrollment status, though, adjusting for neighborhood-level social risk does not affect hospitals' readmission rates much on average, although it does reduce the variation between hospitals' rates, as does any additional risk adjustment.[23,24] Despite the small changes to the average readmission rates for safety-net hospitals, one study found that adjusting for social risk factors moved 22% of penalties from safety-net hospitals to those treating more affluent patients.[25]

Following the recommendation of an expert panel to allow measure developers to include socioeconomic factors in measures, the National Quality Forum (NQF) conducted a trial period for such adjustments during the HRRP's first years. This trial period required measure developers to evaluate the conceptual and empirical relationship between socioeconomic factors and measure outcomes.[26] Social risk was found to have a conceptual relationship and to be a statistically significant predictor of readmissions. However, measure developers did not include social risk in the final risk adjustment model as hospital-level factors were found to be stronger than patient-level factors in outcomes. In the final trial period report, the NQF consensus standards committee noted that the issue of adjusting readmission measures for social risk remained unresolved.[27]

In response to concerns about the higher penalties for safety-net hospitals and findings that risk adjustment would likely not change penalties on average, Congress mandated that beginning in fiscal year 2019, HRRP penalties be assigned within hospital peer groups determined by the proportion of dual-eligible beneficiaries that a hospital treated as a transitional adjustment for dual eligibles. However, the statue also allows the Secretary to take into account the findings from the Report for applying risk adjustment methodologies in the future.[28] The peer grouping policy was implemented in October 2018, with penalties assigned within five peer hospital groups stratified by the proportion of beneficiaries eligible for both Medicare and full-benefit Medicaid.[29] First-year results suggest that the new methodology reduced penalties for all hospitals, but more for safety-net hospitals, as well as reducing the number of safety-net hospitals penalized.[30] Although the change in penalties for individual hospitals varied substantially, overall this approach reduced penalties for safety-net hospitals as intended.[31]

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Section 2: Analysis of New Social and Functional Risk Data

Chapter 4. Analytic Approach

This chapter describes the quantitative approaches used in this Report to address the initial three research questions from Study A, which examined quality and resource use measures in Medicare's value-based purchasing (VBP) programs. This Report builds on Study A's analyses by including additional functional and social risk factors.

As with Study A, this Report quantifies the underlying relationships between social risk factors and the patient-level measures contained in the Medicare payment programs. It also examines the performance of providers[a] serving beneficiaries with social risk factors under specific programs. In addition, this Report analyzes policy options that could potentially address social risk factors to quantify the impact of these potential policies on providers serving beneficiaries with social risk factors.

Study A evaluated all the existing Medicare VBP programs in 2016 and found a consistent relationship between social risk, particularly dual enrollment, and both beneficiary and provider performance on the measures and programs. Study A also found that beneficiaries with social risk factors are more likely to be medically complex (defined as having multiple medical risk factors), as measured by the number of comorbidities. This Report evaluates a number of additional medical risk factors, specifically functional risk factors (defined as physical or cognitive impairments that impair functioning), to determine whether these may be mediating the relationship between social risk and quality and resource use.

The analyses done for this Report build on those findings and use added data sources to focus on fewer measures and VBP programs to evaluate additional measures of functional and social risk. Although not all quality and resource use measures or VBP programs were evaluated, the same measures, programs, and analytic approach were used across risk factors to establish a consistent body of evidence to inform conclusions and considerations within the Medicare program. Specific programs were chosen to represent a variety of providers and care settings (specifically, hospitals, physicians, and post-acute care) and measures that include more beneficiaries to allow for analysis of survey data with a smaller sample size.

I. Research Questions

Analyses were structured around three research questions, as shown in Table 4.1:

Table 4.1. Research Questions

1. What is the association between social risk factors, medical risk factors, and patient outcomes on Medicare quality and resource use measures?
• Example: Are beneficiaries who live alone more likely to be readmitted after a hospitalization for congestive heart failure? • Example: Are beneficiaries with functional risk factors more likely to have higher annual costs of care?

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[a] Note that in this Report the term "providers" is used to indicate physicians, hospitals, dialysis facilities, nursing facilities, Medicare Advantage contracts, etc.

2. What is the association between social risk factors, medical risk factors, and provider performance on Medicare quality and resource use measures?

- Example: Do hospitals who treat more socially and/or functionally at-risk beneficiaries have higher readmission rates?
- Example: Do physician practices with a higher proportion of socially and/or functionally at-risk patients have higher average annual per capita costs?

3. How would accounting for social risk or unmeasured medical risk affect provider performance on quality and resource use measures and in quality programs?

- Example: Under the Hospital Readmission Reduction Program, would accounting for beneficiary social and functional risk change proportion of safety-net hospitals receiving penalties?
- Example: Are physician practices with a higher proportion of socially at-risk patients more likely to receive a downward payment adjustment in the physician Merit-based Incentive Payment System (MIPS)?

II. Statistical Approach, by Research Question

1. What is the association between social risk factors, medical risk factors, and patient outcomes on Medicare quality and resource use measures?

The first step was to evaluate the prevalence of each risk factor in the full Medicare population, as well as in the dually enrolled population and non-dually enrolled population.

To evaluate the role of each risk factor on quality and resource use measures in the full population, raw performance on claims-based measures (readmissions, admissions, costs, etc.) was first calculated for beneficiaries having the risk factor of interest versus beneficiaries not having that risk factor (e.g., living alone versus not living alone, frail vs. non-frail). Statistical models were then used to adjust the raw difference in performance for medical risk factors currently included in the measure's risk adjustment, as well as social risk factors, such as dual enrollment, not currently included. Additional models then examined the impact of new measures of social and medical risk. Of particular interest was the impact these new measures had on the performance differences that Study A had estimated between dually enrolled and non-dually enrolled beneficiaries.

For each social or functional risk factor, all models included risk adjustment based on Centers for Medicare & Medicaid Services (CMS) specifications for each particular measure.[a] Models included:[b]

1) Risk adjustment only
2) Risk adjustment and additional adjustment for dual enrollment
3) Risk adjustment, dual enrollment, and additional adjustment for the risk factor of interest

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[a] Models were built using generalized estimating equations (GEE) with an independent correlation matrix, such that the differences found reflected the total differences between beneficiaries with social risk factors and their non-at-risk peers.

[b] Model performance statistics, such as R^2 or c-statistics, were included to understand the improvement in the model's predictive power with the different risk-adjustment variables.

4) Risk adjustment, dual enrollment, and all available social and functional risk factors

The first two models replicated Study A as a baseline. The third and fourth models evaluated the marginal effect of the risk factor of interest on the measure. These models were repeated for each of the patient-level social risk factors of interest.

2. What is the association between social risk factors, medical risk factors, and provider performance on Medicare quality and resource use measures?

For functional risk factors, analyses were conducted to quantify the effect of receiving care from safety-net providers, i.e., providers treating a high proportion of socially at-risk beneficiaries. These analyses could not be replicated for the additional social risk factors due to the small sample size of the data set including social risk factors, the Medicare Current Beneficiary Survey (MCBS). However, claims-based social risk factors were included. For these analyses, safety-net providers were defined as those serving the highest proportion (top 20%) of dually enrolled beneficiaries, with the exception of hospitals that used the top 20% by disproportionate share (DSH) Index.[a] Models were re-run at the patient level with a random effect for provider, including both patient-level and provider-level social risk as predictors. For these models, the primary predictor was the provider type (e.g., high-dual hospital, or rural dialysis facility); these models yielded the total effect of being cared for by a particular type of provider after accounting for additional patient-level social and functional risk factors.

3. How would accounting for social risk or unmeasured medical risk affect provider performance on quality and resource use measures and in quality programs?

Analyses were next run to determine whether providers with a high share of beneficiaries with functional risk factors were more likely to perform poorly under specific payment programs. These analyses were important because of the processes by which performance is translated to payment in VBP programs. Because of these processes, even if providers serving beneficiaries with functional risk factors do more poorly on the individual measures examined, they could conceivably do relatively well on a program overall. In the Hospital Value-Based Purchasing program, for example, hospitals receive an achievement score and an improvement score for each measure, with the higher of the two becoming their final score. Since a hospital with a high overall score may have received this score due either to high levels of achievement or high levels of improvement, providers with poor absolute performance that are improving quickly may still do well under the program.

In contrast to the prior set of analyses, which were focused on understanding underlying relationships at the patient level, these analyses were all conducted at the provider level. For each program, performance and scoring were examined for providers serving a high proportion of high-social-risk beneficiaries, using the same groupings as above (high-dual, rural, etc.). Linear regression models were used, or, in some cases, median regression models due to small sample size and non-normal performance data. Performance was first compared on individual measures (e.g., mortality for congestive heart failure), then

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[a] The DSH index includes the proportion of dually enrolled beneficiaries the hospital treats and the proportion of Medicare beneficiaries receiving supplemental security insurance (SSI).

on more general domains (e.g., clinical outcomes), and finally on total performance score for each program.

This third set of analyses was designed to help policymakers understand how accounting for social and functional risk in Medicare payment programs might change the way programs impact providers serving beneficiaries with social and/or functional risk factors. As with the second research question, this Report's policy simulations focused on risk factors available in Medicare claims, particularly functional risk and dual-enrollment status, as the latter was the dominant social risk factor found in Study A. Additionally, some simulations included adjustments for area-level social risk factors as these are also available for all Medicare beneficiaries.

For each policy option, the impact was calculated by repeating the calculation of the program score or, when available, payment changes under the new scenario, and then calculating the difference between the status quo and the policy option for safety-net and non-safety-net providers. For the Hospital Readmission Reduction Program, for example, penalties for individual hospitals were calculated with and without adjustment for social and functional risk factors, and the penalties for safety-net versus non-safety-net hospitals were compared under the status quo versus the adjusted option.

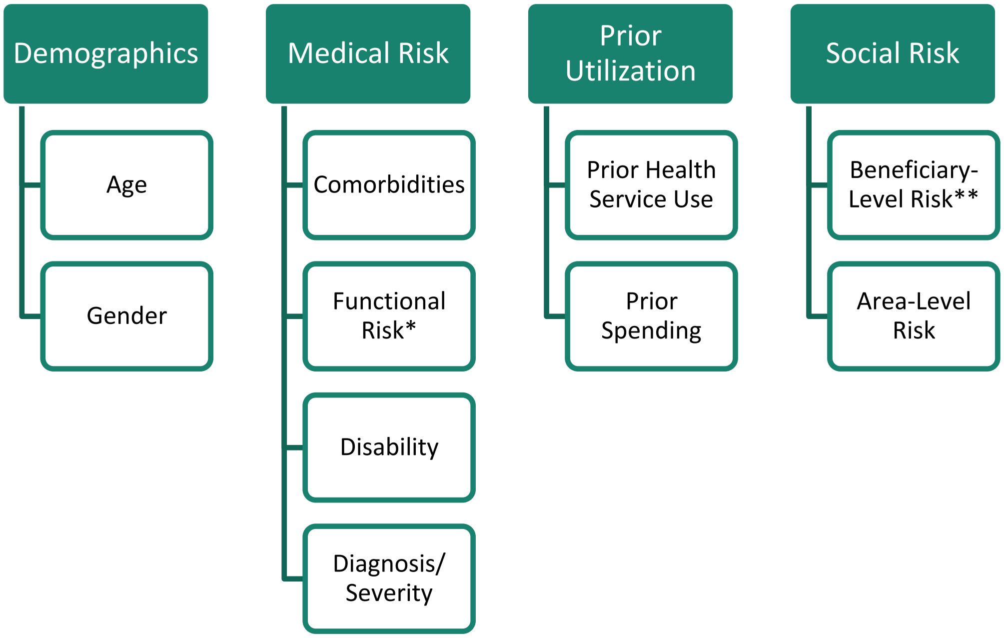
Chapter 5. Risk Adjustment in Quality and Resource Use Measurement

Although ensuring that socially at-risk beneficiaries receive high-quality care requires a multipronged approach, as discussed in earlier chapters, much of the policy discussion concerns whether and how quality and resource use measures should account for differences between beneficiaries. This is part of a broad discussion encompassing all differences between individuals, including differences in both social and medical risk.

I. The Role of Risk Adjustment

Risk adjustment is a statistical approach that allows comparisons between groups or individuals that are fundamentally different in ways that would likely affect their health outcomes. For example, appropriate risk adjustment allows for comparisons between individuals of different ages with different pre-existing conditions. It also allows a provider treating a primarily low-income population to be compared to a provider treating a primarily high-income population. Risk adjustment most commonly involves adding variables to the statistical model, and may include demographics, medical risk, prior utilization, and/or social risk.

Figure 5.1. Potential Risk Adjustment Factors



*This Report includes the recommendation to include functional risk in the standard risk adjustment framework.
**This Report includes the recommendations to adjust resource use and patient experience measures for dual enrollment status as a beneficiary-level social risk factor, but *not* to adjust quality process or outcome measures for social risk.
Note: This Report does not include specific recommendations for other potential risk adjustment variables.

Figure 5.1 shows potential factors that can be used in risk adjustment models. Demographics include age and gender. Medical risk includes all measures of physical health, including comorbid conditions such as heart failure or diabetes, functional risk factors such as frailty or cognitive status, and physical disabilities such as vision or hearing impairment. The severity or cumulative impact (such as medical complexity counting the number of comorbid conditions a beneficiary has) may also be included as part of medical risk adjustment. Beyond a beneficiary's underlying medical risk, prior utilization, measured by health services or spending, may be included. Finally, social risk factors include both beneficiary-level factors, such as poverty or social support, and area-level measures, such as the poverty rate in the beneficiaries' county or the availability of healthy food options.

This Report will use two different terms for risk adjustment, depending on whether payments or measures are involved. It uses the term "case-mix adjustment" to refer to risk adjustments made to provider reimbursement rates to account for expected differences in health care utilization between patients. It uses the term "risk adjustment" to refer to adjustments made to quality and resource use measures to account for differences in expected outcomes between patients. However, the principles and methods are the same for both case-mix adjustment and risk adjustment.

By reviewing the history of case-mix adjustment approaches, this chapter illustrates the evolution of these techniques, which range from grouping patients into similar diagnostic groups to extensive multivariate models. This is followed by an examination of risk adjustment of quality and resource use measures along several dimensions: the intended use of the measures, types of measure, and the proximity of care to outcomes evaluated. The next section focuses in greater depth on the role of risk adjustment in Medicare's VBP programs and the types of measures used in those programs. The chapter ends with a review of the new medical risk factors examined in Study B and evaluated in this Report.

A. Case-Mix Adjustment in Medicare Payments

Case-mix adjustment approaches were originally developed to adjust provider reimbursement for differences in patients' clinical and demographic characteristics. Current examples include the Medicare Severity-Diagnosis Related Groups (MS-DRGs) for inpatient hospital stays, Resource Utilization Groups (RUGs) to determine relative resource intensity for skilled nursing facility (SNF) episodes, and hierarchical condition category (HCC) risk scores to determine payments to Medicare Advantage (MA) plans. Most of these approaches use claims and administrative data to adjust for age, gender, disability, institutional status, Medicaid enrollment, and principal diagnosis that may reflect severity, complications, and/or comorbid conditions. For Medicare post-acute care payments, clinician-assessed functional assessments are also included in the reimbursement case-mix adjustment. Medicare reimbursements also typically adjust for geographic differences in the cost of providing care across the country.

Medicare uses a range of payment approaches from fixed-fee schedules for specific services, to prospective payments for hospital or post-acute care stays, to capitated payments for MA plans (Table

5.1). New bundled payment models that reward providers[a] for reducing episode costs being tested by the Center for Medicare & Medicaid Innovation (CMMI) also case-mix adjust payments.

1. Traditional Medicare: Fee Schedule Payments

Under a fee-schedule payment model, providers are accountable for care provided during the encounter and paid on a per-visit or per-procedure basis. These payments generally are not case-mix-adjusted for beneficiary characteristics.

2. Traditional Medicare: Prospective Payments

Beginning in the 1980s, Medicare introduced prospective payments to control growing costs, starting with hospitals and later expanding to other care settings. Although these payments are part of traditional Medicare, they are slightly different from the fee-schedule payments described above. These payments typically reflect a bundle of services provided within the care setting, and as such may simply charge the average costs for the episode, or may further adjust for the differences in expected service use during the stay.[1] For example, hospital prospective payments incorporate some case-mix adjustment using the MS-DRG case-mix adjustment system, which is based on the severity of the primary diagnosis at admissions, but they do not account for prior comorbidities. Prospective payments for some post-acute services, such as skilled nursing facility (SNF), inpatient rehabilitation facilities, and home health stays, case-mix adjust for a more comprehensive range of factors, including comorbid conditions, functional limitations, and expected intensity of nursing services.

3. Medicare Advantage: Capitated Payments

At the other end of the reimbursement spectrum from fee-schedule payments are capitated payments to MA plans, where plans take on financial risk for all an enrollee's health needs for a fixed payment. Case-mix adjustment in capitated payments began when the Balanced Budget Act of 1997 required that capitated payments to Medicare health maintenance organizations (now MA plans) account for the variation in expected health care costs across organizations. The initial case-mix adjustment models included demographic factors such as age, gender, and Medicaid eligibility. The goal of case-mix adjusting capitation payments was to deter health plans from cherry-picking healthier enrollees who were likely to have lower costs. The Medicare Modernization Act of 2003 allowed the Secretary of Health and Human Services to, "adjust the [capitation] payment amount…for such risk factors as age, disability status, gender, institutional status, and such other factors as the Secretary determines to be appropriate, including adjustment for health status."[2] Since 1997 these changes have led to greater enrollment in MA of more complex patients and dually enrolled beneficiaries. This is notable because prior to these years, MA enrollees were more likely to be healthier than traditional Medicare beneficiaries.[3] Previously, dually enrolled beneficiaries were also more likely to disenroll from MA plans, potentially because their needs were not adequately met.[4]

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[a] Note that in this Report the term "providers" is used to indicate physicians, hospitals, dialysis facilities, nursing facilities, Medicare Advantage contracts, etc.

Current MA capitated payments are extensively case-mix adjusted using the HCC model, which includes health, dual-enrollment, and institutional status.[5] Such case-mix-adjusted payment reflects the different resource needs based on patient case-mix. Since plans accept full financial risk for costs, the underlying payment system incentivizes cost control.

Most recently, the 21st Century Cures Act of 2016 required improvements to the MA HCC risk-adjustment model. These improvements include: taking into account the total number of diseases or conditions a beneficiary has; the possibility of using at least two years of diagnostic data; using separate adjustments for full-benefit dual eligible beneficiaries and other beneficiaries; evaluating additional diagnosis codes for severe chronic kidney disease, mental health, and substance-use disorders; and evaluating payment rates for beneficiaries with end-stage renal disease (ESRD).[6] For calendar year 2017, CMS implemented changes to the HCC model to better reflect differences in health status, including separate HCC models for a number of beneficiary characteristics, including full and partial Medicaid enrollment, institutional/community dwelling, and disability status. CMS has proposed additional changes to the risk-adjustment model to address the requirements of the 21st Century Cures Act by 2022.[7]

Medicare Special Needs Plans for dually enrolled beneficiaries (D-SNPs) and Programs of All-Inclusive Care for the Elderly (PACE) also use case-mix-adjusted capitated payments. These case-mix adjustment models adjust payment using the HCC risk-adjustment model implemented for calendar year 2017, described above. PACE organizations and D-SNPs that qualify as Fully Integrated Dual Eligible (FIDE) SNPs who have similar average levels of frailty to the PACE program receive a frailty adjustment, recognizing that Medicare beneficiaries who are eligible for Medicaid or who are frail have additional health care needs.[8]

Table 5.1. Case-Mix Adjustment in Medicare Payments

		Demo-graphics		**Medical Risk**				**Social Risk**	**Service Use**	**Provider Factors**			
Payment	Type	Age	Gender	Comorbid Conditions	Functional Risk	Disability	Diagnosis/ Severity[a]	Dual Enrollment	Long-Term Care	Geography	Social Risk	Teaching	Quality Perfor-mance
Physician	Fee Schedule						✓			✓			✓
Ambulance	Fee Schedule						✓			✓			
Clinical Labs	Fee Schedule						✓						
DME	Fee Schedule						✓			✓			
Hospital Inpatient	Prospective Payment						✓			✓	✓	✓	✓
Hospital Outpatient	Prospective Payment						✓			✓			
Home Health Agency[b]	Prospective Payment			✓	✓		✓			✓			✓
Hospice	Prospective Payment						✓			✓			
SNF[c]	Prospective Payment			✓	✓		✓			✓			✓
IPF	Prospective Payment	✓		✓			✓			✓		✓	
IRF	Prospective Payment	✓		✓	✓		✓			✓	✓	✓	
ESRD Dialysis	Prospective Payment	✓		✓			✓			✓			✓
Medicare Advantage	Capitated Payment	✓	✓	✓		✓		✓	✓	✓			✓
PACE	Capitated Payment	✓	✓	✓	✓	✓		✓	✓	✓			

[a] Diagnosis/severity refers to payment adjustments based on the reason for a specific healthcare encounter, such as a diagnosis for a hospitalization in a hospital payment

[b] The home health value-based purchasing program is a demonstration and does not affect all home health agencies

[c] Skilled nursing facility (SNF) payments have been adjusted for prior service use, but beginning in October 2019 will instead be adjusted for medical risk factors

Note: DME=durable medical equipment; ESRD=end stage renal disease; IPF=Inpatient Psychiatric Facility; IRF=Inpatient Rehabilitation Facility; PACE=Programs of All-Inclusive Care for the Elderly; SNF=skilled nursing facility.

B. Risk Adjustment in Quality and Resource Use Measurement

In addition to payment case-mix adjustment, risk adjustment for quality and resource use measures is used for six purposes:

1. Public health surveillance
2. Population health management
3. Quality improvement by providers
4. Quality reporting for consumers
5. Value-based purchasing (VBP)
6. Program evaluation

For the first three purposes, risk adjustment for differences in patient populations may be less important, but for the latter three—quality reporting, VBP, and program evaluation—adjusting for differences between patients is central to comparing provider performance or evaluating interventions and programs. Although this Report focuses primarily on value-based purchasing (VBP), each purpose is described briefly here.

1. Public Health Surveillance

Federal, state, and local health departments use public health surveillance measures to compare population health across demographic groups, recognizing that different biological processes influence health outcomes differently for different genders and at different stages of life. However, risk adjustment for additional patient characteristics is not needed for the primary goal of broadly assessing whether policies impact health outcomes such as disease prevalence, well-being, and mortality. Public health surveillance can identify “hot spots”: specific geographic areas or population subgroups at which to target resources.

2. Population Health Management

State agencies with fixed health care budgets and health plans are paid under capitation to manage the health of their enrollees. This management may include allocating resources among enrollees and evaluating the quality of provider networks. Population health management relies on quality indicators ranging from unadjusted rates of disease prevalence and vaccination rates, to process of care measures, to risk-adjusted health outcomes. These measures can be included in electronic health records to provide actionable information to clinicians about whether patients are receiving recommended care.

3. Quality Improvement by Providers

Quality improvement relies on repeated assessments of the same quality or resource use measure for a specific population or provider to evaluate improvement over time. Quality improvement may be conducted in a collaborative manner between providers in a region, a plan network, a health plan, health system, or single site. For quality improvement activities focused on a stable population, risk adjustment may be less relevant as patient characteristics are unlikely to change. Alternatively, providers and plans may benchmark improvement across providers and patient populations, in which case risk adjustment helps to standardize rates of improvement, allowing for more meaningful comparisons.

4. Quality Reporting for Consumers

In contrast to the first three purposes (public health, population health management, and quality improvement), using measures for quality reporting requires risk adjustment for a greater variety of patient factors. Quality reporting helps consumers make informed choices in selecting their health care providers and plans. Creating apples-to-apples comparisons is central to appropriately comparing the performance of providers and plans treating different patient populations and allows the average patient to compare providers' performance. Since consumers are expected to compare performance between providers and plans to make informed choices, resource use and quality outcome measures are adjusted for differences in patient case-mix including at least demographics and comorbidities.

Quality reporting approaches for consumers may summarize information from individual measures or measure sets to provide an overall provider rating (such as stars or a score) to indicate quality. These may also be used to compare resource use measures, which, in turn, might incentivize enrollees to pick lower-cost providers who have met a predetermined quality threshold for a specific procedure or episode of care. Public reporting may also incentivize low-performing providers to improve care.

5. Value-Based Purchasing

Value-based purchasing (VBP) provides bonus payments or penalties based on providers' performance on quality and resource use measures. Thus, the measures used for VBP may be risk adjusted for the same reasons as quality reporting: to appropriately compare providers treating different patient populations. This Report focuses primarily on quality and resource use measures in Medicare's VBP programs; these measures are often used for public reporting. These programs include programs for fee-schedule payments (i.e., the Merit-based Incentive Payment System), prospective payments (i.e., the Hospital Value-based Purchasing Program) and capitated payments (i.e., MA Star Ratings).

Risk adjustment in VBP addresses the multiple factors outside of a provider's control that influence health outcomes, such as demographics and medical risk. Any remaining differences in risk-adjusted measures should reflect differences in providers' quality of care, rather than the characteristics of their patients. For example, spending benchmarks used to determine shared savings for accountable care organizations (ACOs) currently include both regional costs as well as changes in spending for an ACO over time. ACO spending is risk adjusted to ensure differences in spending are not due to differences in patient characteristics within the region. Although an ACO's patient population may be relatively stable over time, sight changes in provider networks or beneficiary health service use could result in an ACO's population being sicker or healthier over time. Risk adjustment of spending and outcome measures thus ensures that payment incentives reflect changes in performance, rather than changes in patient and provider composition.

6. Program Evaluation

Program evaluation assesses quality and resource use measures over time to determine whether a policy or program produces its intended effects or has unintended consequences. Similar to VBP and public reporting, risk adjustment in program evaluation accounts for factors outside of a provider's control that may affect a program's effectiveness. Researchers evaluating health care interventions risk adjust to be able to attribute the impact of the intervention itself, rather than differences in patients between the intervention and comparison group. Thus, outcomes for a program evaluation also have extensive risk adjustment so that populations subject to the policy can be compared to populations that are not. Such groups are often treated by different providers and/or in different geographic areas that are likely to affect the outcomes being assessed. Risk adjustment for program evaluation thus requires demographic and clinical risk adjustment, and additional geographic risk adjustment as appropriate.

II. Risk Adjustment in Medicare's VBP Programs

A. Risk Adjustment in Current Measures and Programs

Medicare's VBP programs include fee-schedule and prospective payments, but they are also incentivized to improve health outcomes and lower costs through VBP incentives and penalties, or through shared savings approaches for Accountable Care Organizations (ACOs) or medical homes.

VBP programs use a variety of quality and resource use measures to assess providers' performance, and the appropriate risk adjustment depends on the type of measure. Table 5.2 below shows resource use and outcome measures in Medicare's VBP programs and risk adjustment variables used.

Table 5.2. Risk Adjustment Variables in Quality and Resource Use Measures Used in Medicare's VBP Programs in 2019

		Demographics		**Medical Risk**				**Prior Utilization**		**Social Risk**	
Measure	Program	Age	Gender	Comorbid Conditions	Functional Risk	Disability	Diagnosis/ Severity	Health Service Use	Long-Term Care	Dual Enrollment	Other
Resource Use											
TPCC	MIPS	✓	✓	✓		✓				✓	
MSPB	HVBP MIPS	✓		✓		✓	✓		✓		
Episode	MIPS	✓		✓		✓	✓		✓		
Quality											
Readmissions											
Condition-Specific	HRRP	✓	✓	✓			✓				
All-Cause Hospital	MIPS ACO	✓		✓			✓				
All-Cause Hospital	MA	✓	✓	✓			✓				
SNF	SNF VBP	✓	✓	✓	✓	✓	✓	✓			
ESRD	ESRD QIP	✓	✓	✓			✓				
Mortality											
Hospital	HVBP	✓		✓	✓		✓				
Other Outcomes											
Home Health Admissions/ ED Visits	HHVBP	✓	✓	✓		✓	✓		✓		
Admissions for Patients with MCCs	ACO	✓		✓							
Prevention Quality Indicators	ACO	✓	✓	✓			✓				

		Demographics		Medical Risk				Prior Utilization		Social Risk	
Measure	Program	Age	Gender	Comorbid Conditions	Functional Risk	Disability	Diagnosis/ Severity	Health Service Use	Long-Term Care	Dual Enrollment	Other
Preventive Care and Screening	ACO MA										
Diabetes Control	ACO MA										
Hypertension Control	ACO MA										
Physical/ Mental Health	MA	✓	✓	✓	✓					✓	✓
Bladder Control	MA										
Medication Adherence	MA										
Patient Safety Indicators	HACRP	✓	✓	✓			✓				
Healthcare Associated Infections	HACRP										
Dialysis Adequacy	ESRD QIP										
Transfusion Ratio	ESRD QIP	✓		✓			✓		✓		
Vascular Access (VA): Fistula	ESRD QIP										
VA: Catheter ≥90 days	ESRD QIP										
Hypercalcemia	ESRD QIP										
Bloodstream Infection	ESRD QIP										

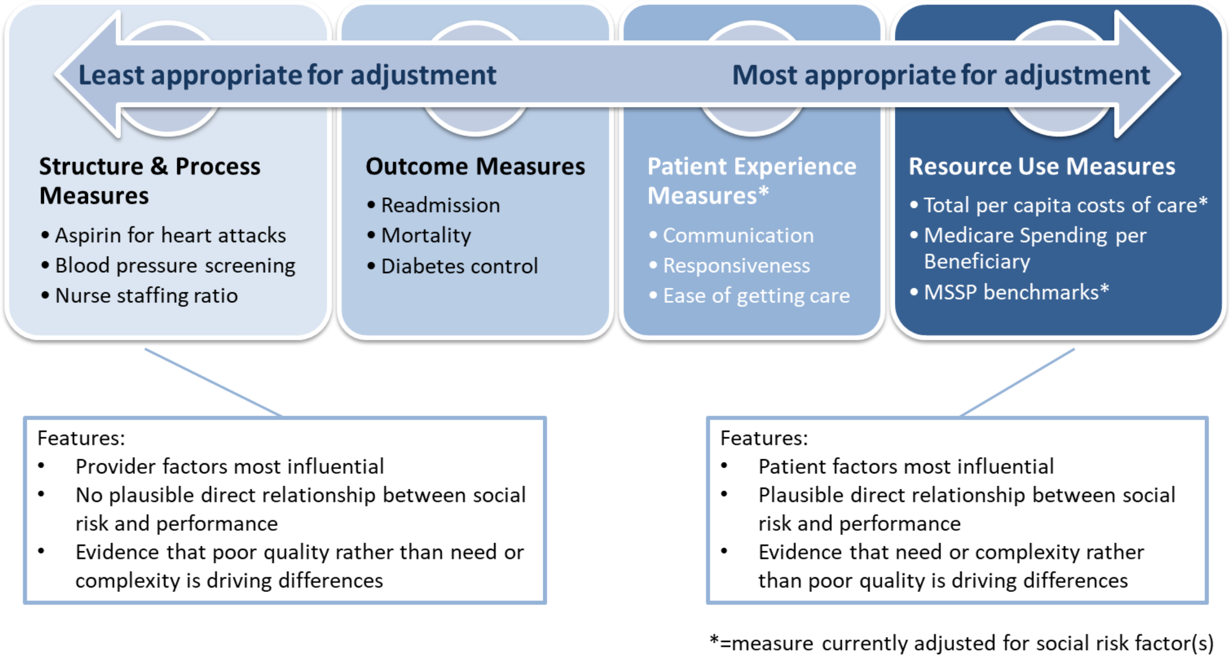
ACO=accountable care organization; ED=emergency department; ESRD QIP=end-stage renal disease quality incentive program; HACRP=hospital-acquired conditions reduction program; HHVBP=home health value-based purchasing program; HRRP=hospital readmissions reduction program; HVBP=hospital value-based purchasing program; MA=Medicare Advantage; MCC=multiple chronic conditions; MIPS=physician Merit-based Incentive Payment System; MSPB=Medicare Spending per Beneficiary; SNF=skilled nursing facility; SNP=special needs plan; SNF VBP=SNF value-based purchasing program; TPCC=total per capita cost; VA=vascular access.

1. Considerations for Risk Adjustment in Quality and Resource Use Measures

Measures may assess quality or resource use. Quality measures may be structural, process, or outcome measures, and the appropriate risk adjustment approach varies across these types of measures (Figure 5.2) depending on the provider's control over the result being assessed. Structural measures evaluate the availability of services or personnel, such as the ratio of nurses to residents in a skilled nursing facility. Process measures assess whether a patient received a recommended treatment. For example, one process measure assesses whether patients with a heart attack received a beta-blocker medication in the hospital. Structural and process measures typically do not adjust for patient characteristics, as they assess the standard of care for all patients, and there is not a theoretical relationship between patient characteristics and the measure. In addition, process measures typically exclude patients for which the standard treatment of care is not appropriate (i.e., vaccination of immunocompromised patients) or unlikely to achieve the expected outcomes (i.e., immunocompromised patients, frail seniors). However, extensive use of exclusion criteria may limit the broad applicability of quality measures to incentivize improvements across all patients, and exclude the highest-risk patients from quality measurement.

Outcome measures, the third type of quality measures, assess health outcomes such as mortality, functional improvements, or hospital readmissions within 30 days of discharge. Resource use measures assess the cost of care within a specified time period, such as the total per capita cost (TPCC) for patients seeing a primary care provider. Performance on outcome and resource use measures can vary widely due to differences between patients, so these two types of measures are typically risk adjusted for clinical differences between patients including demographics and medical risk.

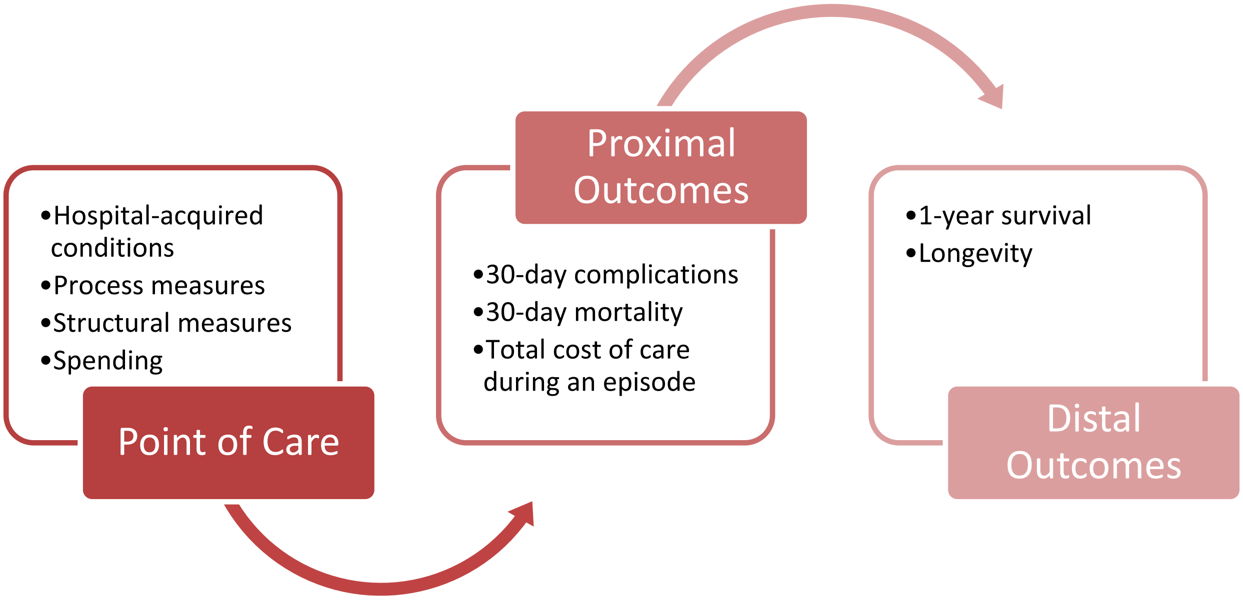
Figure 5.2. Considerations for Adjusting Quality and Resource Use Measures for Social Risk by Measure Type



Note: MSSP=Medicare Share Savings Program

Another consideration in assessing the degree of provider control over an outcome is how proximal or distal the outcome is to the point of care. Providers have more control over outcomes impacted by processes in the care setting, such as preventing a second heart attack in a hospital. Providers may also be able to influence proximal outcomes, such as 30-day complications or mortality, although to a lesser extent than events in the care setting. Providers have the least influence over distal outcomes such as long-term survival or longevity. Figure 5.3 illustrates how provider control diminishes outside of the care setting and over time.

Figure 5.3. Considerations for Adjusting Quality and Resource Use Measures for Social Risk: Time from Point of Care



As Medicare's VBP programs have matured, the type of measures included has shifted from process to outcome measures, requiring more extensive risk adjustment to appropriately compare measures across providers. This is particularly salient for the question of whether to account for beneficiaries' social risk. As the programs move toward mostly outcome and resource use measures, such as hospital admissions, readmissions, and care coordination, social risk factors begin to play a larger role in measure performance.

To recap, risk adjustment of quality and resource use measures can be considered along several dimensions:

1. The intended use of the measures for comparative or public health management
2. The type of measure (structural, process, outcome, or resource use)
3. The degree of provider control over outcomes (whether care is proximal or distal to outcomes)

2. Current Risk Adjustment Approaches for Quality and Resource Use Measures

Risk adjustment for quality and resource use measures borrow from the models developed for payment case-mix adjustment and typically rely on information found in Medicare claims submitted to CMS. Most measure developers routinely include the MS-DRGs and/or comorbidities such as HCCs. Risk adjustment for demographics varies across measures as some do not include gender. Most measures do not adjust for social risk. However, measures that include the HCC risk score, such as the TPCC measure, partially account for dual enrollment, including it in the risk score. The types of risk adjustment variables included in quality and resource use measures used in Medicare's VBP programs were shown earlier in Table 5.2.

Claims-based risk adjustment approaches may not capture disease stage or severity, since claims do not always include this information. For example, cancer staging is not included in claims' diagnosis codes, although severity is included in MS-DRGs. Without severity, the ability to create apples-to-apples comparisons between patient populations is limited, even for patients with the same principal condition. Furthermore, functional risk factors such as mobility or cognitive impairments affect outcomes but may not be comprehensively captured in claims-based diagnosis codes focused on comorbidities.

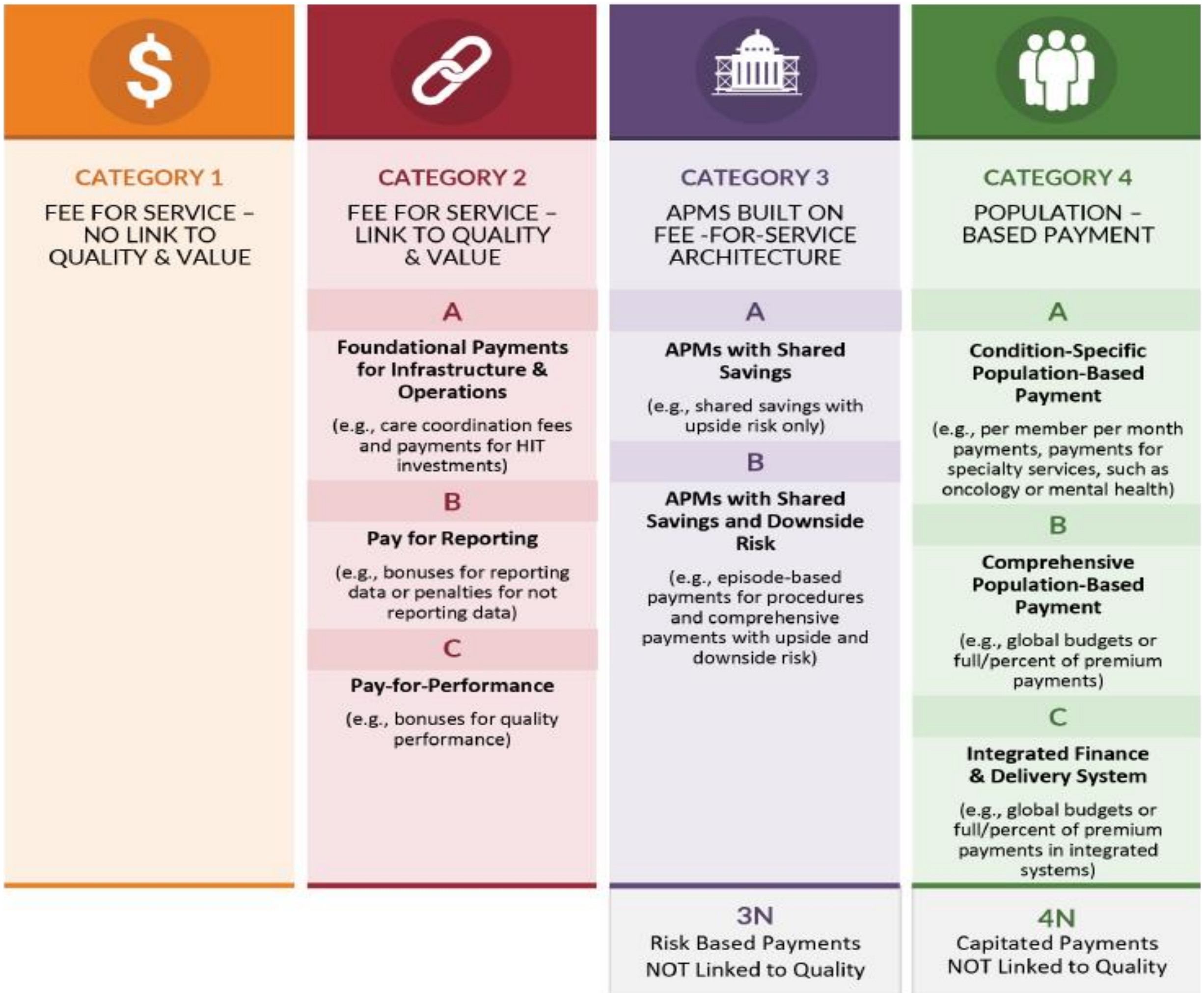
In addition to claims and administrative data, CMS has sought to augment risk adjustment with other sources of data. These include functional assessments (available in post-acute care settings) and information about prior health care utilization (e.g., hospital length of stay or intensive-care-unit use). These approaches acknowledge that claims-based risk adjustment may not comprehensively capture differences in a person's health. However, even the additional assessment data, such as functional status, may not be collected on all patients in all settings. Electronic health records (EHRs) could potentially resolve this problem, but their use as a data source for quality and resource use measures may be limited until they are fully adopted by all clinicians.

B. Delivery System Transformation and the Role of Risk Adjustment

The goal of delivery system transformation is to shift toward value by linking payments with outcomes and costs. CMS has gradually implemented programs for each provider and care setting, first with pay-for-reporting and then with VBP. These outcomes-based incentive programs require additional risk adjustment because the health outcomes and health care resource utilization needed to achieve high-quality care likely differ based on patient case-mix.

The Health Care Payment Learning & Action Network's framework for categorizing alternative payment models (APMs) is a useful guide for understanding how the underlying payment approach intersects with the incentive payments for quality and value (see Figure 5.4). The framework identifies the spectrum of underlying payment approaches from traditional Medicare fee schedule and prospective payments (referred to as fee-for-service in categories 1, 2, and 3 of the figure), to capitated payments (referred to as population-based payment in the figure).

Figure 5.4. Alternative Payment Model Framework



CATEGORY 1
FEE FOR SERVICE – NO LINK TO QUALITY & VALUE

CATEGORY 2
FEE FOR SERVICE – LINK TO QUALITY & VALUE

A
Foundational Payments for Infrastructure & Operations
(e.g., care coordination fees and payments for HIT investments)

B
Pay for Reporting
(e.g., bonuses for reporting data or penalties for not reporting data)

C
Pay-for-Performance
(e.g., bonuses for quality performance)

CATEGORY 3
APMS BUILT ON FEE -FOR-SERVICE ARCHITECTURE

A
APMs with Shared Savings
(e.g., shared savings with upside risk only)

B
APMs with Shared Savings and Downside Risk
(e.g., episode-based payments for procedures and comprehensive payments with upside and downside risk)

3N
Risk Based Payments NOT Linked to Quality

CATEGORY 4
POPULATION – BASED PAYMENT

A
Condition-Specific Population-Based Payment
(e.g., per member per month payments, payments for specialty services, such as oncology or mental health)

B
Comprehensive Population-Based Payment
(e.g., global budgets or full/percent of premium payments)

C
Integrated Finance & Delivery System
(e.g., global budgets or full/percent of premium payments in integrated systems)

4N
Capitated Payments NOT Linked to Quality

Source: Health Care Payment Learning & Action Network. Alternative Payment Models (APM) Framework. 2017 July 11. http://www.hcp-lan.org/workproducts/apm-refresh-whitepaper-final.pdf.

In the first three categories in the APM framework, the underlying reimbursement approach is based on traditional Medicare payments. Medicare's VBP programs introduce payment incentives and penalties in Category 2, but only for a small portion of providers' payments, currently ranging from 2-9%. Some alternative payment models in Category 3, such as medical homes and ACOs, put providers at greater financial risk for total costs of care and improved outcomes while still being paid under traditional Medicare. The models in Category 3 are considered Advanced APMs (such as Next Generation ACOs) and eligible for a 5% bonus under the Medicare Access and CHIP Reauthorization Act because providers have at least 8% of revenues at financial risk.[9]

The capitated payment models (Category 4 of the APM framework) are considered full-risk models because, in comparison to models in Category 3 with only partial risk, providers are accountable for all spending for patients with specific conditions in their total patient population. MA health plans are one example of capitated payments where health plans are given a fixed payment per member per month to provide all of a beneficiary's Medicare-covered health services. The payer is incentivized to manage total costs by reducing utilization, lowering disease burden, and slowing disease progression in enrollees. As discussed earlier, case-mix adjusted capitated payments are crucial to encouraging insurers not to cherry-pick healthier, lower-cost enrollees. They also ensure that insurers receive sufficient resources to manage the health of sicker, more complex enrollees.

New population health models in some states have further expanded accountability beyond total costs of care to include quality and resource use measures. Participants in CMS Innovation Center's all-payer state innovation models (SIM) in states including Pennsylvania, Utah, and Nevada are designing and developing data tracking and analytic systems to monitor and analyze population health outcomes.[10] To perform well on quality and resource use measures, these population health models include plans for integrating and coordinating community resources, local needs improvement projects, and developing regionally based Accountable Communities of Health. Some of these models incorporate quality or resource use measure targets. For example, the Million Hearts Model™ seeks to lower the incidence of first-time heart attacks and strokes by encouraging providers to systematically assess risk scores and discuss modifiable risk factors.[11]

III. Why Include New Medical Risk Factors

Study A found that beneficiaries with social risk factors, particularly dually enrolled beneficiaries, are more likely to be medically complex, as measured by comorbidities. This Report evaluates additional medical risk factors, specifically functional risk factors, to determine whether these may be mediating the relationship between social risk and quality and resource use. Social risk factors and functional risk—both physical and cognitive functional impairments—are interlinked. For example, disability arising from functional limitations may reduce a person's economic opportunities and earning potential, which further impacts health.[12-14] Incorporating these additional medical risk factors into risk adjustment could improve quality and resource use measures to more fairly assess providers' performance.

IV. Medical Risk Factors Evaluated in This Report

To understand the relationship between medical risk, social risk, and quality and resource use measures, this Report evaluates the functional risk factors of frailty; functional limitations; mental, behavioral and neurodevelopmental disorders; and potentially disabling conditions as additional medical risk factors. The analyses specifically examine the extent to which functional risk factors are associated with social risks such as dual enrollment, and if their inclusion improves the predictive power of the risk-adjustment model. Data sources for these additional risk factors included patient-reported health and function as well as claims-based indicators.

A. Claims-Based Functional Risk Factors Evaluated

This Report includes four categories of functional risk factors captured using claims-based indicators. Each is outlined below.

1. Frailty-Related Diagnoses

Frailty as a clinical phenotype was first described by Linda Fried in in 2001.[15] It was considered a marker for biological age, as evidenced by slow walking speed, weakness, exhaustion, low activity level, and weight loss. Performance assessments to measure these dimensions must be done in person and thus are cumbersome, time consuming, and not routinely conducted in clinical care. Consequently, though the recognition of and literature around frailty in specific clinical settings has grown exponentially over the past two decades, there had, until recently, been little work on frailty at the policy level. In 2014, Kim and colleagues published a proposal for using claims data to identify patients with frailty-related diagnoses.[16] Joynt et al. operationalized this concept in Medicare data, defining frailty as two or more frailty-related diagnoses within a year.[17] Subsequently, additional claims-based frailty algorithms have been developed and validated by: (1) predicting functional decline using the Medicare Current Beneficiary Survey,[18] and (2) comparing these predictions against objective performance assessments using the Health and Retirement Survey.[19]

This Report uses the claims-based frailty diagnoses developed by Kim et al. as markers of frailty. The diagnoses are included in the measure’s risk-adjustment model as separate covariates, but included as a group of frailty-related diagnoses to represent the overall concept of frailty. See the appendix to this chapter for a list of the frailty-related diagnoses and associated ICD-9 (The International Classification of Diseases, Ninth Revision) codes.

2. Functional Dependence

Fried’s clinical concept of frailty does not encompass the functional limitations or disability that develop as a result of frailty, disease, and aging. To capture this related concept, the term “functional dependence” is used to describe the degree to which an individual has limitations in independently completing activities of daily living. Current Medicare quality and resource use measures rarely include markers of functional dependence in the risk adjustment due to lack of information. However, some post-acute care settings can adjust for functional status using activities of daily living (ADL) and other functional dependence factors assessed by clinicians.

To identify patients at high risk of functional dependence, various claims-based algorithms have been developed that attempt to consider the use of durable medical equipment, such as oxygen or a hospital bed at home, along with markers of health care utilization, such as prior hospitalizations, home health visits, or nursing home stays. Several studies have shown that adding functional status to spending measures improves prediction of spending for Medicare beneficiaries with Alzheimer’s and related dementias, though these studies used patient self-reported functional status rather than claims-based algorithms.[20,21]

One such claims-based algorithm, published by Faurot et al., was chosen for inclusion in this study because it has broad applicability for the general Medicare population and was validated against patient self-reported limitations from the Medicare Current Beneficiary Survey.[22] This algorithm of 20 conditions, procedures, and services (listed in the appendix to this chapter) has predicted patients’ risk for limitations in activities of daily living. Faurot's algorithm has been mapped to information on Medicare claims, where it predicted a higher risk of falls, difficulty with physical ability, and mortality.[23]

Although not used in this Report, several other algorithms have been used to measure functional limitations. For example, cancer researchers Davidoff et al. developed a claims-based algorithm to adjust for patients' underlying functional performance or disability status for use in observational studies of cancer patients. This algorithm has been validated in patients with cancer but not in broader populations.[24]

3. Mental, Behavioral and Neurodevelopmental Disorders

In addition to physical function, cognitive impairment may affect patients' health care utilization and health outcomes. Mental, behavioral and neurodevelopmental disorders, such as depression, anxiety, psychoses, and substance use, are associated with poor health outcomes and higher health care spending.[25,26] However, many current risk-adjustment models exclude mental, behavioral and neurodevelopmental disorders, or only include certain ones.

There is precedent for including mental, behavioral and neurodevelopmental disorders in risk-adjustment models. The CMS HCC risk-adjustment model includes a few mental disorders, although many quality and resource use measures included in Medicare's VBP programs still use only some of the HCC diagnoses and exclude mental, behavioral and neurodevelopmental disorders. CMS updated the CMS HCC risk-adjustment model to include dementias and Alzheimer's disease to determine payments to MA contracts.[6] A report to Congress on the HCC model found that including these measures improves the accuracy of spending predictions for this subset of patients.[27] Additionally, Medicaid case-mix payment models include more mental, behavioral and neurodevelopmental disorders than just the HCC model. Using these measures in Medicaid's Chronic Illness and Disability Payment System (CDPS) case-mix adjustment model was found to better predict spending for Medicaid beneficiaries with disabilities than HCC models.[28,29]

To assess whether including additional mental, behavioral and neurodevelopmental disorders would improve the risk-adjustment model and help explain worse outcomes among dually enrolled beneficiaries, the analyses in this Report identified mental,behavioral behavioral and neurodevelopmental disorders not captured in the current HCC risk score but considered mental, behavioral and neurodevelopmental disorders under ICD-9. The list of mental, behavioral and neurodevelopmental disorders and associated ICD-9 codes are in the appendix to this chapter.

This Report included indicators of each of these mental, behavioral and neurodevelopmental disorders in each measure's risk-adjustment model. While these conditions are generally not included in the frailty models developed by Kim or Faurot, some may overlap with CMS's list of potentially disabling conditions (discussed below).

4. Potentially Disabling Conditions

Various disabling conditions are known to be associated with worse health outcomes and higher costs. To better identify beneficiaries with these conditions, CMS provides indicators for Medicare and Medicaid beneficiaries who may have any of 39 chronic health, mental health, substance use, and other potentially disabling conditions,[30] including blindness, deafness, multiple sclerosis, traumatic injuries, HIV/AIDs, and mobility impairments. Not all of these potentially disabling conditions are typically included in the CMS HCC risk-adjustment model, but in this Report each of 39 were assessed for in each measure evaluated.

The list of conditions, associated ICD-9 codes for the algorithms, and references as well as data on Medicare and Medicaid beneficiaries with these conditions, are available on the Chronic Conditions Warehouse (CCW) website and in the appendix.

5. Functional Risk Factors as Multi-Dimensional Concept of Frailty or Disability

Although these functional risk factors are presented as separate concepts above, they can also be considered together to assess a broader concept of functional risk in which the full set of functional risk factors determines an individual’s physical and cognitive function. This approach is consistent with the “deficit-accumulation” model of frailty, an alternate and multi-dimensional concept of frailty proposed by geriatrician Kenneth Rockwood that spans a broader range of disabilities than Fried’s more clinical or biological concept of frailty.[31] Rockwood’s approach calculates a Frailty Index for each person—the ratio of deficits over the total number of items measured in a model. Rockwood’s approach is agnostic to the specific variables included and helps to reduce data needed in a model. Although these analyses do not use this ratio approach, the functional risk factors included in this Report could be used to generate such a ratio.

6. Limitations of Claims-Based Measurement Approach

It is important to acknowledge that claims are designed for payment, not for assessing health status. As such, claims include diagnoses relevant for payment and are only available for patients who use health services. Using claims to assess functional risk may exclude some beneficiaries whose claims do not have the specific functional risk indicators used in this Report, regardless of whether these beneficiaries have functional risk factors. In particular, mental, behavioral and neurodevelopmental disorders are likely to be underdetected and only coded if patients seek care from mental health providers. However, prior experience suggests that if these diagnoses are used in quality and resource use measures, coding will improve.[32]

Claims indicators also do not provide any information about severity, and may thus over- or underestimate the extent of functional risk. However, given that most measures in Medicare’s VBP programs focus on the utilization, spending, and outcome measures of health care users, claims-based functional risk indicators may still improve risk adjustment.

B. Survey-Based Functional Risk Factors Evaluated

In addition to including functional risk factors captured using claims-based indicators, the analyses in this Report include results of questions from The Medicare Current Beneficiary Survey (MCBS) that capture patient-reported functional risk in the following areas:

1. Activities of Daily Living

Activities of daily living (ADLs) attempt to measure a level of functional capacity or functional disability and have been used to capture concepts such as functioning, medical risk, and increasingly, frailty. ADLs as a scale or indicator of functioning have existed for over a half century, with Katz's ADL Index of Independence in Activities of Daily Living being the first widely used index. This index still serves as the basis for much work and research in this area.[33]

The MCBS captures the six ADLs using responses by beneficiaries (or their proxies) to the question: "Because of a health or physical problem, do you have any *difficulty* with the following?" and include: (1) bathing or showering; (2) dressing; (3) eating; (4) getting in or out of bed or chairs; (5) walking; and (6) using the toilet. Each ADL has the response options of "Yes," "No," "Doesn't Do," "Not Ascertained," "Don't Know," and "Refused." The subset of respondents who choose "Doesn't Do" are then asked if they don't do the particular ADL because of a health problem. Along with those answering "No," those who answered yes to this latter question were considered as having difficulty with that particular ADL for purposes of this analysis.

To date there is no consensus method for using ADLs captured by the MCBS as a way of measuring functional risk, frailty, functional impairment, or similar concepts. Several studies have created a dichotomous variable involving either being frail/impaired versus not, based on the number of ADLs with which a respondent has difficulty. This cutoff can be having difficulty with any ADLs versus no ADLs, two or more ADLs versus no ADLs, or some combination of specific ADLs.[22,34-36] Other studies have used "stages" of disease (for example, categorizing combinations of ADL difficulties into increasing stages of functional dependence).[37,38] Based on this work, several sensitivities with various groupings and ADLs were evaluated for this Report, balancing statistical rigor as well as interpretability and usability of results. The final analyses categorized the ADLs by count using zero ADL difficulties; one ADL difficulty; or two or more ADL difficulties in the models.

2. Instrumental Activities of Daily Living

Instrumental activities of daily living (IADLs) are activities that are related to independent living, and, similarly to ADLs, have often been captured as a scale or index (such as the Lawton IADL Scale).[39] While ADLs generally include activities that must be done as an essential part of daily functioning, IADLs involve activities that are important for independent living but are less essential. Thus, individuals who have difficulties with multiple ADLs are typically not able to live independently without services and supports.

The MCBS captures six different IADLs, using the question: "Because of a health or physical problem, do you have any *difficulty* with the following?" The IADLs captured are: (1) preparing meals; (2) managing money; (3) shopping for groceries or personal items; (4) performing light housework; (5) performing heavy housework; and (6) using a telephone. Respondents are only asked about IADLs if they live in a community, non-facility setting.

For the analyses in this Report, several sensitivities were evaluated with various groupings of IADLs, balancing statistical rigor as well as interpretability and usability of results. These IADLs were dichotomized in the models as either no IADL difficulties, or one or more IADL difficulties.

3. General Health Status

The General Health Status variable is another functional risk factor, captured in the MCBS when respondents (or their proxies) are asked to rate their health compared to others their same age. Responses are in a five-point Likert-type scale and range from excellent to poor.

Based on face validity and the distribution of the responses, the analyses in this Report collapsed the General Health Status variable from five to three categories, combining some of the response options into: (1) Excellent/Very Good; (2) Good; and (3) Fair/Poor. This variable was then included in select analyses as an additional functional risk factor to evaluate its potential effect on the relationship between being dually enrolled and outcomes in Medicare quality programs.

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Chapter 6. Framework for Identifying Social Risk Factors and Selecting New Data Sources

In addition to presenting both the data sources and social risk factors evaluated in this Report, this chapter provides an overview of the conceptual framework developed by the National Academies of Sciences, Engineering, and Medicine (NASEM) to identify which social risk factors influence health outcomes under Medicare's value-based payment (VBP) programs. It also sheds light on prior validation of these factors and explains what factors are used in current programs.

The chapter also describes findings from the NASEM's report on selecting new data sources that contain more detailed information on beneficiary social risk factors than the data sources used in Study A and that may contribute to the currently unexplained variation in outcomes. In addition, it presents the elements considered in selecting these additional data sources. Because no single data source includes all social risk factors, this Report also had to identify available data sources and select the most appropriate source to answer the research questions.

I. National Academies of Sciences, Engineering, and Medicine's Framework for Social Risk in Medicare's Value-Based Purchasing Programs

At the request of the Office of the Assistant Secretary for Planning and Evaluation (ASPE), the NASEM developed a framework by which social risk factors might influence health care outcomes of interest to Medicare's VBP programs, as described in Chapter 2.[1] The NASEM also identified one or more indicators for each social risk factor that met their criteria of having a relationship to health outcomes and that preceded care delivery, could not be manipulated by providers,[18] and that could be used practically for these purposes. The social risk factors included in the NASEM framework—which are more comprehensive than those used in Study A—are described below and illustrated in Figure 6.1. These factors are explained in more detail in Chapter 8.

A. Socioeconomic Position

The term "socioeconomic position" (SEP) as described in the NASEM report captures both socioeconomic status (SES) and access to social resources. It includes income, wealth, education, Medicare dual eligibility, and occupation.

B. Race, Ethnicity, and Cultural Context

Race and ethnicity capture social disadvantage, including access to social institutions and rewards; behavioral and other sociocultural norms; inequality in the distribution of power, status, and material

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[18] Note that in this Report the term "providers" is used to indicate physicians, hospitals, dialysis facilities, nursing facilities, Medicare Advantage contracts, etc.

resources; and psychosocial exposures.[2,3] This category includes race and ethnicity, language, nativity, acculturation, and documentation status.

C. Gender

This category includes gender identity and sexual orientation. Gender captures social dimensions of a beneficiary's gender and encompasses both normative and non-normative gender identity. Sexual orientation is a category used to include and classify individuals who identify as lesbian, gay, bisexual, queer, questioning, or otherwise nonconforming.[1]

D. Social Relationships

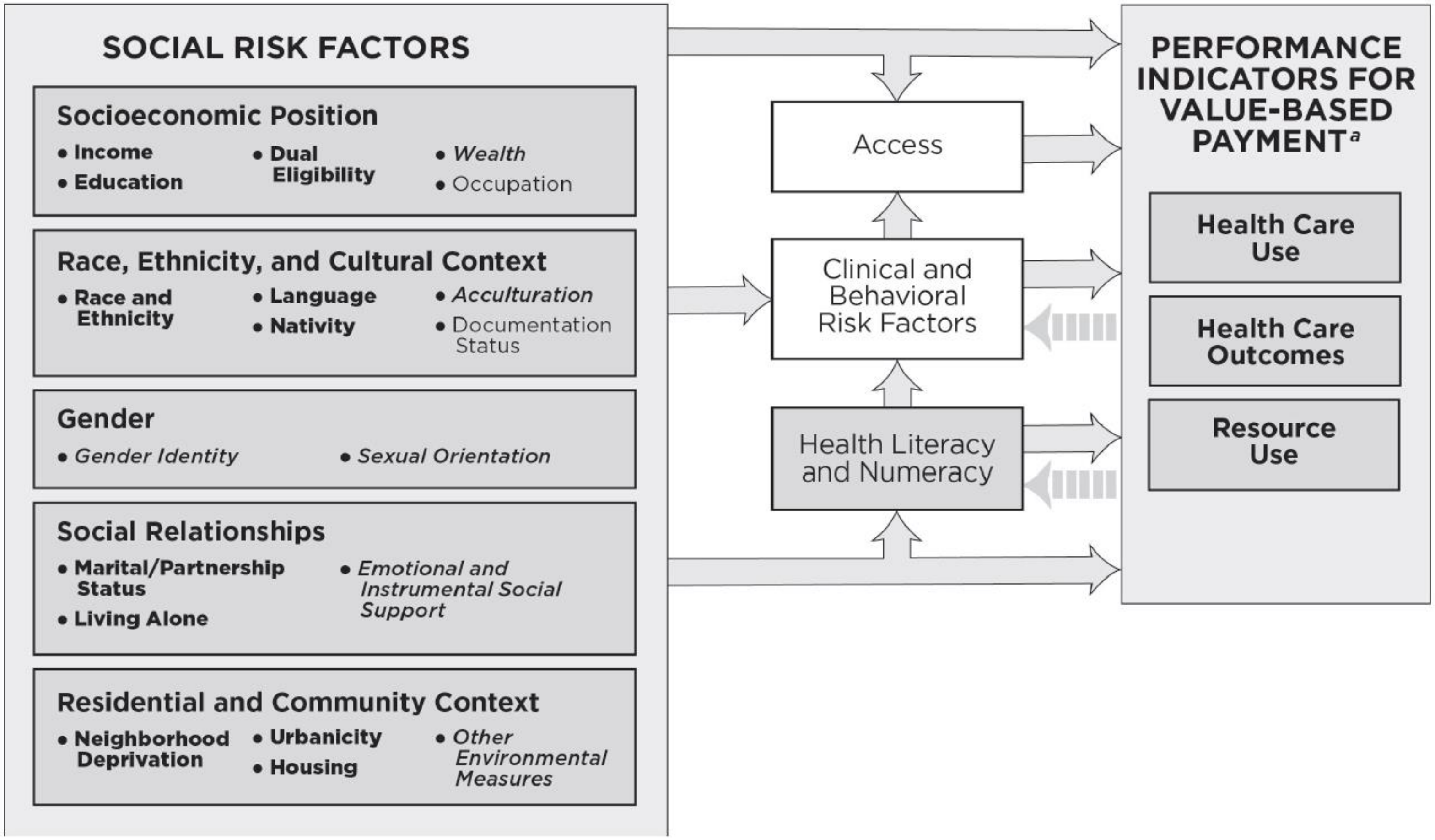
Social relationships include marital/partnership status, living alone, and emotional and social support in the form of financial assistance, material goods, or services. These relationships are important for health because they provide access to social networks that in turn can provide access to health care resources.

E. Residential and Community Context

The social risk factor "residential and community context" captures a set of broadly defined characteristics of a beneficiary's living environment, including characteristics that describe aggregate characteristics of individuals residing in a given neighborhood or community, as well as characteristics of different social and physical environments. This category includes neighborhood deprivation, urbanicity, housing, and other environmental measures such as physical environment (e.g., transportation options and proximity to services) and social environment (e.g., violence, presence of social organizations, and social cohesion).

In its report, The NASEM concluded that "…all other things being equal, the performance of a given health care system (in terms of quality, outcomes, and cost) can undoubtedly be affected by the social composition of the population it serves….Health literacy and social risk factors (SEP; race, ethnicity, and cultural context; gender; social relationships; and residential and community context) have been shown to influence health care use, costs, and health care outcomes in Medicare beneficiaries."[1]

Figure 6.1. National Academies of Sciences, Engineering, and Medicine's Conceptual Framework of Social Risk Factors for Health Care Use, Outcomes, and Cost



Source: National Academies of Sciences, Engineering, and Medicine. Accounting for Social Risk Factors in Medicare Payment: Identifying Social Risk Factors. Washington, DC: The National Academies Press; 2016 July 12. https://www.nap.edu/catalog/21858/accounting-for-social-risk-factors-in-medicare-payment-identifying-social.

II. Social Risk Factors Used in Current Programs

The previous chapter discussed how quality and resource use measures in Medicare's VBP programs currently adjust for medical risk. Some VBP programs, including the Hospital Readmissions Reduction Program (HRRP), the End Stage Renal Disease Quality Incentive Program (ESRD QIP), the Merit Based Incentive Program (MIPS), and the Medicare Advantage (MA) program, currently account for social risk as well.

For the HRRP, the 21st Century Cures Act requires, beginning in October 2018, that the Centers for Medicare & Medicaid Services (CMS) assess penalties based on a hospital's performance relative to other hospitals with a similar proportion of patients who are dually eligible for Medicare and full-benefit Medicaid.[4]

The ESRD QIP reduces payments to ESRD facilities that do not meet or exceed certain performance standards.[5] Among the ESRD measures used in this program, the standardized mortality ratio (SMR) is adjusted for race and ethnicity, while the rest of the measures, including the standardized hospitalization ratio (SHR), are not.[6]

The total per capita cost (TPCC) measure, used in the physician Merit Based Incentive Program (MIPS) is risk adjusted to account for certain individual-level risk factors. In particular, the risk adjustment for TPCC includes beneficiary's hierarchical condition category (HCC) score, which captures dual-enrollment status.[7]

In 2017, CMS introduced the Categorical Adjustment Index (CAI) for MA plans' and Prescription Drug Plan's Star Ratings as an adjustment to address the average within-MA contract disparity in performance among beneficiaries who receive a low-income subsidy, are dual eligible (LIS/DE), and/or are disabled.[8] "Within-MA contract" differences are those differences in quality or outcomes between beneficiaries in the same MA contract—for example, between dually enrolled and non-dually enrolled beneficiaries enrolled in the same MA contract. In contrast, "between-MA contract" differences are those differences in quality or outcomes between beneficiaries enrolled in different MA contracts—for example, between beneficiaries enrolled in Contract A versus Contract B. Between-MA contract differences may represent differences related to the quality of a plan's performance or to unmeasured differences between patients.

The adjusted measure set is selected from a subset of the Star Ratings measures to calculate the CAI values. The subset of the Star Ratings measures excludes measures that are already case-mix adjusted for socioeconomic status (SES), do not focus on the beneficiary level, are scheduled to be retired or revised during the Star Rating year in which the CAI is being applied, or are only applicable for Special Needs Plans. The adjusted measure scores are used to determine the CAI values, which are then added to or subtracted from contracts' overall and/or summary ratings based on the proportion of LIS/DE beneficiaries and proportion of beneficiaries with disability status.

III. New Social Risk Data Sources

The NASEM identified three sources of data on social risk factors in its response to the ASPE's request to help identify data sources on social risk factors: (1) new and existing sources of CMS data, (2) data from providers and plans, and (3) alternative government data sources.[9]

A. New and Existing Sources of CMS Data

Existing sources of CMS data include administrative (enrollment, assessment, and claims) data and beneficiary surveys, which contain limited social risk factor data, such as whether beneficiaries are living alone. In Study A, ASPE examined three social risk factors (income, race/ethnicity, and rurality) from Medicare claims data.[10-12] The NASEM mentioned that CMS could collect new data on social risk factors through a new administrative form or beneficiary survey. They noted that accounting for social risk factors could mitigate adverse consequences of the current VBP programs, justifying the expected costs and burden of new data collection.[9]

There is also growing interest in collecting social risk information in post-acute care (PAC) settings (such as long-term care hospitals, skilled nursing facilities, inpatient rehabilitation facilities, and home health). Medicare PAC providers are required to collect information through patient assessments, including demographics, functional status/mobility, mental/behavioral health status, and availability of a caregiver at home. Beginning in 2020 these assessment items will include the social risk factors of race and ethnicity, preferred spoken language, health literacy, transportation, and social isolation.[13] These factors impact the type of PAC services that are needed by patients and the level of Medicare payments. However, assessments are only available for beneficiaries who use PAC services, a small proportion of all Medicare beneficiaries.

There is currently an opportunity to document identified patient social needs in a standardized, claims-based format using ICD-10 (International Classification of Diseases, Tenth Revision) z-codes for social risk. The Z55-Z65 codes in particular cover potential health hazards related to socioeconomic and psychosocial circumstances. However, some social needs lack existing codes. For example, the PRAPARE (Protocol for Responding to and Assessing Patients' Assets, Risks, and Experiences) screening tool, a national effort by the National Association of Community Health Centers to help providers collect data to better understand and address social risk factors, has been mapped to z-codes, but not all screening response categories have a corresponding z-code.[14] Section 3 of this Report ("Emerging Areas") provides more details about these codes.

B. Data from Providers and Plans

Data from providers and plans include electronic health record (EHR) data and administrative data that providers and plans send to CMS. Some social risk factors such as race, ethnicity, and language are already captured in some EHRs or administrative information. New social risk factor data collected by providers and plans may also be important for the care and services they provide.[2]

C. Alternative Government Data Sources

Alternative government data sources include administrative data and national surveys overseen and maintained by federal agencies other than CMS (including other agencies within the U.S. Department of Health and Human Services, HHS) and state agencies. Some of these data could be linked to Medicare beneficiary data at the individual or the area level. For example, the Social Security Administration may be the best source of individual-level social risk factor data, such as marital status and income, which could be linked to Medicare beneficiary data. In contrast, the American Community Survey, which does not survey every single beneficiary, may be better used as a source of area-level social risk data.[9]

D. Prior Validation of Social Risk Factor Data

There are multiple reliable and validated indicators for some social risk factors, but others do not yet have validated questions, let alone available data. For example, information on marital status is collected because it is important for Social Security benefits. In contrast, information on partnership, which changes over time, especially among older adults, is not collected, in part because, while the literature includes validated indicators for partnership, these may need to be standardized.[9] Some social risk factors may be difficult to ascertain accurately, such as net worth because most people do not know the value of their net worth, or have low response rate due to the sensitivity of questions about social risk. However, the Health and Retirement Study has designed measures and methods to collect these data, indicating that some such difficulties can be addressed.[15] Both the availability and validity of social risk factor information was considered when selecting data sources for analysis in this Report.

IV. Characteristics Considered and Data Sources Chosen

The data sources used in this Report needed to be considered carefully in terms of four characteristics: 1) data quality, 2) data availability, 3) data comprehensiveness, and 4) adequate sample size. Data sources with these characteristics are considered reliable and most likely lead to consistent results and accurate conclusions.

The IMPACT Act mandated that ASPE use Medicare data in Study A and other sources of data, potentially including survey data, in Study B. ASPE compared several data sources to determine which would be used in this Report. These datasets included CMS data such as the Medicare Current Beneficiary Survey (MCBS), the CMS Consumer Assessment of Healthcare Providers and Systems (CAHPS) surveys (for hospitals, home health, home and community based services, physicians, Medicare Advantage, prescription drug plans, hemodialysis, hospice, Accountable Care Organizations, outpatient centers, and fee-for-service beneficiaries), and the Health Outcomes Survey (HOS) in addition to Medicare enrollment, claims, and assessment data. The non-CMS data considered included the American Community Survey (ACS), the Health and Retirement Study (HRS), and the National Health and Aging Trends Study (NHATS). This section presents the four characteristics considered necessary to produce consistent and accurate conclusions and how each data source satisfies them.

A. Data Quality

Data quality is related to validity, reliability, and completeness of data. Information from Medicare enrollment, claims, and assessments are considered reliable.[16] Survey data such as the MCBS, CAHPS, HOS, ACS, HRS, and NHATS are self-reported and many of these surveys have been operating for many years (more than 25 years for the MCBS, for example, and since 2005 for the ACS) and substantial efforts are made to make sure that the collected information is reliable and complete, such as not reporting outcomes with low statistical reliability. The ACS is required by law, and the most recent response rate is 93.7% (for 2017).[17] The MCBS's response rate is considered good compared to other surveys; the response rate for ever-enrolled beneficiaries between 2012 and 2015 is 65.2%.[18]

B. Availability

The data used in this Report needed to be available for researchers and linkable to Medicare claims data, allowing researchers to evaluate their relationship with quality and resource use measures. Providers collect Medicare claims data and report them to CMS, which makes them available to researchers. Data from the MCBS, HRS, and NHATS are also available for researchers with a data use agreement with CMS. All of these surveys can be linked to Medicare claims data. The MA CAHPS and HOS are only for Medicare beneficiaries enrolled in MA plans (who are not enrolled in traditional Medicare using fee-for-service), so Medicare fee-for-service claims are not available to assess quality and resource use measures for these beneficiaries. MA encounter data is becoming available for more recent years, so evaluating quality and resource use measures for MA beneficiaries may be possible in the future. The ACS is collected by the U.S. Census Bureau and is available for researchers. However, linking the survey to the Medicare enrollment file requires using personally identifiable information (PII), and hence the analyses need to be conducted at the Census building with linkage conducted through an agreement between ASPE, CMS, and the Census Bureau.

C. Comprehensiveness

The data needed to be comprehensive. In particular, it must include information on social risk measures. Again, the Medicare claims data used in Study A included data on dual enrollment in Medicare and Medicaid, race and ethnicity, disability, and residence in a rural area. Other data sources that include information on additional social risk factors not available in Medicare claims therefore rate the highest on criteria for comprehensiveness, as shown in Table 6.1.

Table 6.1 Comparison between Different Survey Datasets and Claims for Availability of Social Risk Factors

Social Risk Factor	CMS Data					Other Data Sources		
	MCBS	CAHPS	HOS	Claims	PAC Assessments	ACS	HRS	NHATS
Socioeconomic Position								
Income	✓		✓			✓	✓	✓
Wealth	✓						✓	✓
Education	✓	✓	✓			✓	✓	
Employment	✓					✓	✓	
Occupation						✓		
Insurance Status (proxy for socioeconomic position)	✓	✓	✓	✓		✓	✓	✓
Race, Ethnicity, and Cultural Context								
Race	✓	✓	✓	✓	✓	✓	✓	✓
Ethnicity	✓	✓	✓	✓	✓			
Language	✓	✓	✓		✓*	✓		✓
Nativity						✓	✓	
Gender								
Gender	✓	✓	✓	✓		✓		
Sexual Orientation								
Gender Identity								
Social Relationships								
Marital Status	✓		✓			✓	✓	✓
Living Alone	✓		✓		✓			
Social Support					✓*			✓
Residential and Community Context								
Urbanization						✓ (2010 only)		
Community Socioeconomic Position						✓		

Social Risk Factor	CMS Data					Other Data Sources		
	MCBS	CAHPS	HOS	Claims	PAC Assessments	ACS	HRS	NHATS
Community Racial Composition						✓		
Community Ethnic Composition						✓		
Community Educational Attainment						✓		
Community Employment						✓		
Community Nativity						✓		
Community Family Composition						✓		
Community Language						✓		
Community Indices								
Housing	✓		✓				✓	✓
Community Walkability								
Access to Transportation					✓*			✓
Proximity to Services	✓							
Community Safety/Violence								
Community Social Disorder								
Presence of Social Organizations								
Community Social Cohesion								✓
Health Literacy								
Health Literacy					✓*			
Numeracy								

Notes: Social risk factors are based on the National Academies of Sciences, Engineering, and Medicine's Report. ACS=American Community Survey; CAHPS= Consumer Assessment of Healthcare Providers and Systems; CMS=Centers for Medicare & Medicaid Services; HOS=Health Outcomes Survey; HRS=Health and Retirement Study; MCBS=Medicare Current Beneficiary Survey; PAC=Post-acute care; NHATS=National Health and Aging Trends Study.

*PAC assessment items that will be included beginning in 2020

The MCBS is one of the most comprehensive surveys of Medicare beneficiaries, providing information on many topics about the Medicare Program and its enrollees.[19] Social risk measures in MCBS include marital status, level of education, language, living alone, private insurance coverage, income, assets, and home ownership. Functional risk measures include activities of daily living (ADLs) and instrumental activities of daily living (IADLs). The CAHPS, NHATS, and HRS include similar information, but the HRS also has questions on nativity, while the NHATS has additional questions on social support, access to transportation, and community social cohesion.

The ACS, a nationally representative survey with a very large sample size, includes many social risk factors that are not in any of the other surveys. The Census Bureau uses this survey to estimate small-area data at the census-tract and block-group levels. Data for the ACS are collected on a variety of social risk factors, including race and ethnicity, marital status, education, language, employment, living alone, income, home ownership, private insurance coverage, and nativity.

D. Sample Size

Having a large and representative sample size is important to draw accurate conclusions. Medicare claims data are collected for all fee-for-service Medicare beneficiaries, and the sample used in research is representative for most Medicare beneficiaries. The average monthly number of Medicare fee-for-service beneficiaries in 2017 was 38.6 million. During the same calendar year, approximately 6.6 million Medicare beneficiaries used inpatient hospital care, 1.8 million used skilled nursing facilities, 1.6 home health agencies, and 1.5 million hospice services.[20]

CAHPS samples are relatively large but vary based on the survey type. For example, the health plan CAHPS includes about 190,000 Medicare beneficiary responses every year and the clinician and group survey includes 350,000 responses across all insurance types.[21] The HOS surveys include about 500,000 beneficiaries enrolled in Medicare Advantage plans.[22] HRS is conducted every other year and includes about 22,000 people over age 55.[23] The sample size of NHATS is about 8,000 Medicare beneficiaries annually.[24] The MCBS uses the Medicare enrollment file as its sampling frame and therefore has a representative sample of Medicare beneficiaries. However, the MCBS has a relatively small sample size of approximately 15,000 respondents annually and only two-thirds of these are asked about their income and assets. The small sample size limits the measures of quality and resource use that can be evaluated, and in practice excludes measures for services that a small proportion of beneficiaries use, such as PAC. Furthermore, the small sample size means that there are not enough beneficiaries receiving care from a specific provider to evaluate provider performance. On the other hand, the ACS is a nationally representative survey with a very large sample size of approximately 700,000 Medicare beneficiaries each year.

After considering data sources for each social risk factor with respect to these characteristics (data quality, availability, comprehensiveness, and adequate sample size), ASPE decided to use the Medicare Current Beneficiary Survey (MCBS) and the American Community Survey (ACS) for the analyses included in this Report. CAHPS was not chosen because it includes a limited number of social risk factors, and individual-level responses are not easily available for research. The HOS focuses on Medicare beneficiaries who are enrolled in MA plans, but Medicare claims have historically not been available to assess quality and resource use measures for its beneficiaries. HRS is conducted every other year and does not have information on language or living alone, while the NHATS has a small sample size of only 8,000 Medicare beneficiaries. PAC assessments will not begin to collect many of the social risk factors until 2020, and are only available for PAC settings so are not generalizable to the larger Medicare population.

V. Social Risk Factors Evaluated in This Report

This Report evaluates social risk factors from the three data sources selected for best meeting the criteria described above to ensure consistent and accurate conclusions: Medicare claims, the Medicare Current Beneficiaries Survey (MCBS), and the American Community Survey (ACS).

A. Medicare Claims

Social risk factors from Medicare claims data include dual enrollment in Medicare and Medicaid, race/ethnicity, and rurality. Based on Study A's finding that dual enrollment was the strongest predictor of poor health outcomes in the Medicare population, this Report focused most on dual enrollment and secondarily evaluated race/ethnicity and rurality from Medicare claims as follows:

- Dual enrollment: Medicare data captures Medicaid enrollment with a variable labeled "state reported dual eligible status code." This code, captured monthly, indicates which of the individual categories of dual eligibility apply to the beneficiary.
- Race/ethnicity: Information on race/ethnicity in claims comes from the Research Triangle Institute (RTI) race and ethnicity code, which is obtained by Medicare from the Social Security Administration (SSA) and adjusted for undercounts by RTI.
- Information on rurality in claims comes from the concept developed by the Office of Management and Budget (OMB).[25]

B. Medicare Current Beneficiary Survey (MCBS)

Self-reported social risk factors from MCBS include marital status, education, language, living alone, income, wealth (total assets and home ownership), and private health insurance coverage. It should be noted that while the MCBS includes information on marital status, it lacks information on partnership. This Report thus uses a binary variable for marital status, married or not married (widowed, divorced, separated, or never married) and as a result does not provide a definite answer to presence or absence of such social relationships. The Report also constructs a binary variable to indicate whether beneficiaries are living alone or not, despite the fact that MCBS data provide a continuous variable indicating total number of people in the household (0 to ≥8).

To indicate language barriers, this Report combines the two relevant variables available in the MCBS: language of interview, and using a proxy interviewee because of language problem. It also condenses beneficiary's education, available in the MCBS data as one of nine categories, into just four categories.

The income variable in both the MCBS and this Report, is a continuous variable, estimating total household income of beneficiaries. Wealth includes both home ownership and total assets. While home ownership indicates whether an individual owns or does not own a home, total assets is the sum of home value and non-home assets.

The variable for private insurance coverage indicates whether or not a Medicare beneficiary is covered by a private health insurance, including employer-sponsored insurance (ESI), self-purchased insurance, or both. Almost 60% of Medicare beneficiaries are covered by Medicare only.

Chapter 7, which specifically concerns the analysis of these data from the MCBS, includes additional information on these social risk factors.

C. American Community Survey (ACS)

The ACS includes the following self-reported social risk factors: race and ethnicity, marital status, education, language, employment, living alone, income, home ownership, private insurance coverage, and nativity. Additional information on these social risk factors is included in Chapter 9.

D. Area-Level Factors

This Report adjusts for area-level social risk factors using different indices for different analyses. These indices include area deprivation index (ADI), social deprivation index (SDI), and social capital index, all of which are described below.

1. Social Deprivation Index (SDI)

The social deprivation index (SDI) was developed by the Robert Graham Center, the policy institute affiliated with the American Academy of Family Physicians. It accounts at the census-tract level for poverty, single parent households, over-crowding, percent Black, and high-need age groups, as well as and people with under 12 years of schooling and those who do not own a car, do not own a home, and/or are not employed.[26] However, for this Report, the SDI was calculated at the ZIP code level.

2. Social Capital Index

The social capital index was developed as part of Senator Mike Lee's Social Capital Project and measures the health of associational life across the United States.[27] Associational life is defined as the "web of social relationships through which we pursue joint endeavors—namely, our families, our communities, our workplaces, and our religious congregations." Indices and sub-indices for this index are available at the state and county levels.[28]

The social capital index utilizes several categories of variables to measure social capital at the state level: family unity, family interaction, social support, community health, institutional health, collective efficacy, and philanthropic health. This Report uses the four variables available at the county level: family health, community health, institutional health, and collective efficacy.

VI. Limitations of This Approach to Data Sources

As with any other research, this approach to social risk factors used by this Report has limitations. It was not possible to use some other potentially valuable data sources given their limited social and functional risk factors (such as CAHPS, HRS, and NHATS). Yet another limitation of this Report is its use of the MCBS, which itself is limited as a source for provider-level analyses because of its small sample size. (Provider-level analyses were conducted for medical risk factors using claims data only—see Chapter 7). These limitations are to some extent balanced out by the use the ACS, which has a larger sample size.

VII. Opportunities for Future Research Using Additional Data Sets

This Report presents findings from currently available data on the role of social risk factors in Medicare's VBP programs. It also sheds light on current efforts of health care providers, health plans, and other stakeholders in collecting social risk data and addressing social needs. These efforts are still in their infancy, but once they mature several datasets that are rich in social risk factors are expected to be available for researchers as opportunities for future research. These datasets may include information from the assessment tools (such as the PRAPARE screening tool), ICD-10 z-codes, EHR, and the CMS electronic clinical-quality measures (eCQMs). Availability of these data will help researchers conduct studies related to evaluating particular interventions, addressing social needs, and sharing experiences of best practices. Section 3 of this report, which explores emerging areas of research, sheds light on current efforts to collect these datasets.

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Chapter 7. Claims-Based Functional Risk Factors and Performance in Medicare Quality and Resource Use Measures

I. Introduction

Study A found that social risk factors, particularly dual enrollment, are associated with greater medical risk and poorer performance on quality and resource use measures, even after accounting for the medical risk factors. However, current risk-adjustment algorithms used in Medicare's value-based purchasing (VBP) programs typically focus only on a limited number of traditional medical comorbidities such as diabetes, kidney disease, and heart disease. Accurately assessing the role of social risk may be difficult to the extent that adjustments do not include a fuller group of medical risks (such as functional risks).

A growing body of literature, moreover, suggests that, for many important health outcomes, including functional risk factors such as functional status, frailty, disability, and mental health predict outcomes better than traditional comorbid medical risk factors alone. This chapter therefore focuses on understanding functional risk to determine whether dually enrolled beneficiaries and the providers[a] serving them still perform worse on quality and resource use measures after accounting for a broader array of potential differences in health status.

This study included four groups of functional risk factors that are not currently used in clinical risk adjustment of quality measures. These factors were chosen because they have previously been developed and validated by researchers and are available using Medicare claims. They are:

1. Frailty-related diagnoses
2. Functional dependence
3. Mental, behavioral and neurodevelopmental disorders
4. Potentially disabling conditions

Each of these four categories of functional risk factors, captured using claims-based indicators, is described in detail in Chapter 5. Chapter 5 also includes a discussion of certain limitations in using claims data to capture functional risk. However, it is important to note that there are also distinct advantages in this approach. For example, a claims-based approach does not involve additional data collection by providers, and data are available for all Medicare beneficiaries who have had a health care visit. In addition, several validation studies conducted on the algorithms for frailty and functional dependence have demonstrated high predictive power with key outcomes.[1-3]

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[a] Note that in this Report the term "providers" is used to indicate physicians, hospitals, dialysis facilities, nursing facilities, Medicare Advantage contracts, etc.

The four functional risk factors considered in this Report for the five VBP programs were evaluated for the following six quality and resource use measures, each described in its respective section below:

1. Condition-specific readmissions (for acute myocardial infarction, heart failure, pneumonia, total hip arthroplasty/total knee arthroplasty, or chronic obstructive pulmonary disease) in the Hospital Readmissions Reduction Program (HRRP)
2. All-cause hospital readmissions in the Merit-based Incentive Payment System (MIPS)
3. Medicare Spending per Beneficiary (MSPB) in the Hospital Value-Based Purchasing Program (HVBP)
4. Total per capita cost (TPCC) in the MIPS
5. Skilled nursing facility (SNF) readmission in the SNF Value-Based Purchasing Program (SNF VBP)
6. Home health agency hospitalization in the Home Health Value-Based Purchasing Program (HHVBP) model

These quality and resource use measures were selected to reflect a range of settings of care, and/or because Study A showed that they had large disparities by dual-enrollment status (even after risk adjustment). The measures were used to address the study's three key research questions, each described more fully in Chapter 4:

1. What is the association between dual-enrollment status, functional risk factors, and patient outcomes on Medicare quality and resource use measures?
2. What is the association between dual-enrollment status, functional risk factors, and provider performance on Medicare quality and resource use measures?
3. How would accounting for social or functional risk affect provider performance on quality and resource use measures and in quality programs?

II. Analysis Methods

In this chapter, the prevalence of each of the four categories of functional risk factors was assessed first for each measure of interest. Provider-level performance was evaluated at the tax identification number (TIN) level. Groups of physicians that share a practice all bill under the same TIN, making this a practice-level analysis. At the physician practice level, high-dual practices were defined as practices with the top 20% proportion of dually enrolled beneficiaries.

The entire set of functional risk factors was then added to the measure's risk-adjustment model to assess the relationship between functional risk, social risk as measured by dual enrollment, and the measure outcome. Adding functional risk factors addressed whether the effect of dual enrollment may be overestimated due to unmeasured functional factors in current risk-adjustment models. This analysis also determined whether functional risk adjustment would change providers' performance, including the performance of safety-net providers who disproportionately care for patients with high levels of social risk. The analysis also estimated providers' scores with functional risk adjustment for two VBP programs (HRRP and MIPS).

Impact of the various risk-adjustment approaches was examined on high-dual and other providers. Although the measure-level analyses in Study A examined all available social risk factors and included them in the risk-adjustment simulations, the policy simulations described in this chapter used "dually enrolled beneficiaries" as the key explanatory variable to explore if other social risk or functional risk factors might explain worse outcomes and higher spending. This is because Study A found that among all social risk factors available in claims, dual enrollment was most associated with poor outcomes. In addition, data on dual enrollment are readily available across all Medicare beneficiaries, and collected in a standardized manner.

While the first two research questions were evaluated for all six measures, the third was evaluated (through policy simulations) for only three VBP programs (the HRRP, MIPS cost category, and SNF VBP) and one additional measure (all-cause hospital readmission). This is because many of the other value-based programs use a large number of additional measures to adjust payment that are not included in this study, so that numerous approaches might be used to account for social and/or functional risk at either the measure or program level. For example, Study A evaluated risk adjustment, peer group stratification, and improvement bonuses for treating socially at-risk beneficiaries because these were policies in place or being considered at that time. In contrast, to focus on the new functional and social risk factors being evaluated, this study only considered risk adjustment for dual enrollment, functional risk, and both dual enrollment and functional risk as policy options.

III. Condition-Specific Readmission

Condition-specific readmission measures were the first measures examined. These measures, currently used to evaluate hospitals for public reporting and in the Hospital Readmissions Reduction Program (HRRP), evaluate risk-standardized, all-cause hospital readmissions within 30 days of discharge following index admissions for a specific condition—acute myocardial infarction (AMI), heart failure, pneumonia, total hip/knee arthroplasty (THA/TKA), or chronic obstructive pulmonary disease (COPD). These measures use a three-year performance period, and readmission rates are evaluated at the hospital level. The condition-specific readmission measures are the only measures in the HRRP.

Study A evaluated the condition-specific readmission measures and found that dually enrolled beneficiaries were more likely to be readmitted within 30 days of hospital discharge across the measures, even after risk adjustment. Study A also showed that hospitals with a higher proportion of dually enrolled beneficiaries had higher risk-adjusted readmission rates, even after accounting for individuals' dual-enrollment status.

A. Prevalence of Beneficiary Functional Risk Factors

The first part of the analysis showed that dually enrolled beneficiaries were less healthy with more comorbidities and functional risk factors than other hospitalized beneficiaries. Over 1.3 million hospital admissions from 2012-2015 were included across the five specific conditions examined. Depending on the measure, between 7% and 32% of beneficiaries were dually enrolled. For each of the conditions, dually enrolled beneficiaries had higher risk-adjusted readmission rates (ranging from 2.3 percentage points higher for THA/TKA to 5.5 percentage points for AMI). Characteristics of the AMI cohort are shown as an example in Table 7.1; other conditions are shown in the appendix to this chapter.

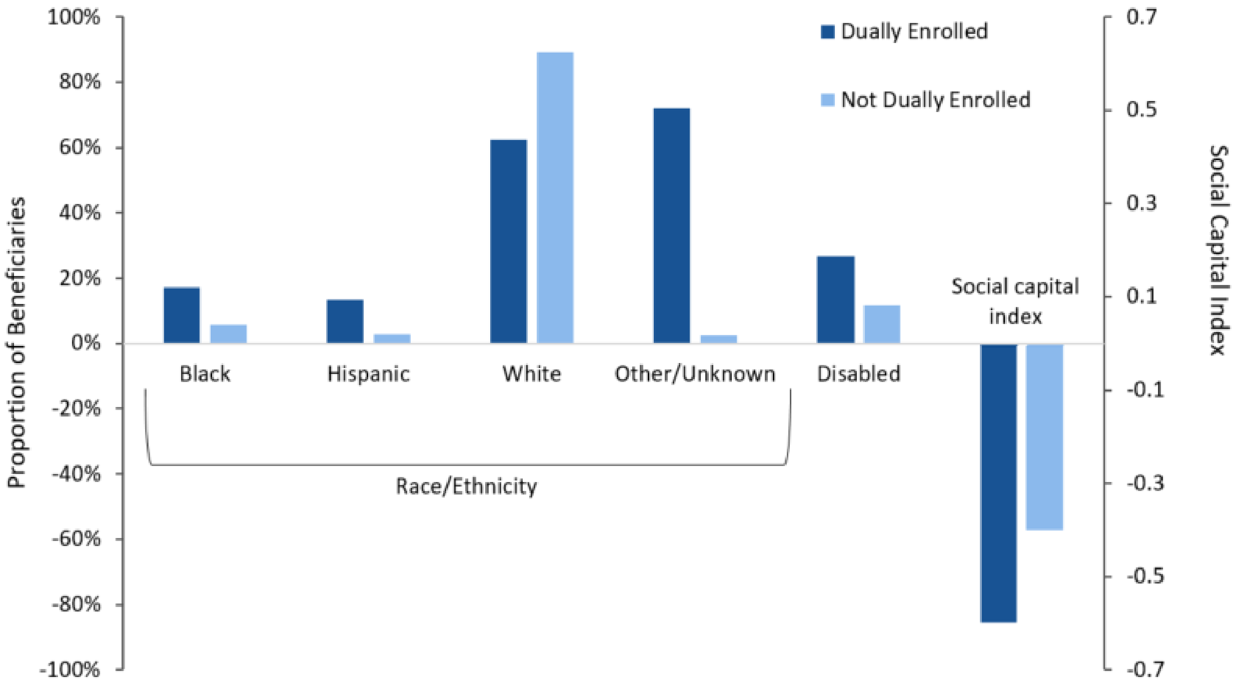
Table 7.1. Characteristics of Beneficiaries Included in the AMI Readmission Measure by Dual-Enrollment Status

Variable	All	Dually Enrolled	Not Dually Enrolled
Admissions	160,000	32,000	128,000
Dually Enrolled	20.0%	100.0%	0.0%
Readmission Rate	15.7%	20.1%	14.6%
Age (mean)	78	78	78
Male	52.7	38.2	56.3
Medically Complex (top 20% HCC scores)	20.0%	33.6%	16.6

Note: Based on 2012-2015 admissions. Medically complex is defined as HCC risk scores in the highest 20% among stays included in the measure. HCC=hierarchical condition category, a count of comorbid conditions.

These dually enrolled beneficiaries were more likely to be racial or ethnic minorities and live in more deprived neighborhoods based on the social capital index scores. For the AMI readmission measure, they were also more likely to be originally entitled to Medicare due to a disability (See Figure 7.1 below and additional conditions in the appendix to this chapter).

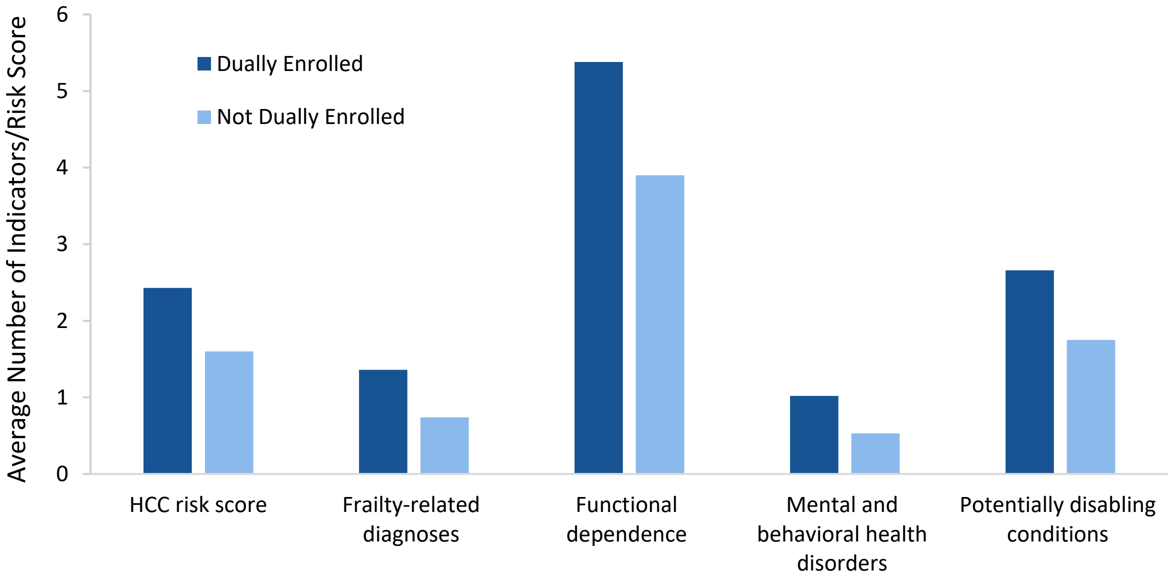
Figure 7.1. Prevalence of Claims-Based Social Risk Factors of Beneficiaries Included in the AMI Readmission Measure by Dual-Enrollment Status



Note: Based on 2012-2015 admissions. AMI=acute myocardial infarction.

Dually enrolled beneficiaries were also less healthy on average. They were more likely to be medically complex and to have more comorbid conditions. The prevalence of four sets of functional risk factors for the AMI readmission measure are presented in Figure 7.2, and the appendix to this chapter includes each individual indicator included for each of the four risk factors as well as the other conditions.

Figure 7.2. Medical Risk of Beneficiaries Included in the AMI Readmission Measure by Dual-Enrollment Status



Note: Based on 2012-2015 admissions. AMI=acute myocardial infarction.

For the frailty-related diagnoses, dually enrolled beneficiaries were more likely to have each of 13 indicators for the frailty-related diagnoses. For the functional dependence risk factors, dually enrolled beneficiaries were more likely to have 18 of the 20 indicators included in this functional risk factor. They were more likely to have all but one of the mental, behavioral and neurodevelopmental disorders indicators, and all but two of the potentially disabling conditions (see appendix to this chapter).

Findings: Dually enrolled beneficiaries are less healthy with more comorbidities and functional risk factors than other beneficiaries who are hospitalized.

B. Associations between Functional Risk factors, Existing Beneficiary Social Risk Factors, and Beneficiary Outcomes

To understand whether patient characteristics, rather than differences between hospitals, influence outcomes, the next analysis used a random-effects model to determine the within-hospital odds of being readmitted within the first 30 days after hospital discharge for dually enrolled beneficiaries. The models included the dual-enrollment effect with 1) no risk adjustment, 2) with the readmission measures risk adjustment, 3) with adjustment for additional functional risk factors, and 4) with adjustment for additional social risk factors (Table 7.2).

On average, dually enrolled beneficiaries had 24-56% higher odds of being readmitted than other beneficiaries, depending on the condition under consideration. After measure risk adjustment (age and comorbidities), dually enrolled beneficiaries had 9-31% higher odds of readmission than other beneficiaries. The risk-adjusted models correctly predicted readmission for 62-68% of beneficiaries, as indicated by a c-statistic of 0.62-0.68 across cohorts. Additionally accounting for social risk factors only slightly increased the odds of being readmitted (7-25% higher) and did not change the predictive power of the models. When the functional risk factors were added to the measure risk adjustment, the odds ratios dropped, with dually enrolled beneficiaries now having only 6-12% higher odds of readmission, and the predictive power of the model marginally increasing to 64-72%.

Table 7.2. Association between Dual Enrollment and Hospital Readmission

Model	Odds of Hospital Readmission for Dually Enrolled Beneficiaries									
	AMI		Heart Failure		Pneumonia		THA/TKA		COPD	
	OR	C	OR	C	OR	C	OR	C	OR	C
Raw Difference	**1.46**		**1.27**		**1.24**		**1.56**		**1.30**	
Measure Risk Adjustment (RA) Only	**1.16**	0.67	**1.13**	0.62	**1.09**	0.65	**1.31**	0.68	**1.16**	0.64
RA + Social Risk Factors	**1.13**	0.67	**1.11**	0.62	**1.07**	0.65	**1.25**	0.69	**1.15**	0.64
RA + Functional Risk Factors	**1.10**	0.69	**1.10**	0.64	**1.06**	0.67	**1.21**	0.72	**1.12**	0.67
RA + Functional Risk Factors + Social Risk Factors	**1.09**	0.69	**1.09**	0.64	**1.05**	0.67	**1.19**	0.72	**1.11**	0.67

Note: All odds are statistically significant at $p<0.05$. All models include hospital random effects. Social risk factors include: rurality (living outside a metropolitan statistical area (MSA)), race/ethnicity (Black, Hispanic, White, other), ZIP code median income, social deprivation index (SDI), and social capital index). Functional risk factors include: frailty-related diagnoses; functional dependence; mental, behavioral and neurodevelopmental disorders; potentially disabling conditions; and disabled as the original reason for Medicare enrollment. AMI-acute myocardial infarction; COPD=chronic obstructive pulmonary disease; THA/TKA=total hip arthroplasty/total knee arthroplasty.

Thus, while adding additional social factors to the model did not result in meaningful improvements, adding functional risk factors to the models explained more of the difference in readmission rates and also improved model performance. Even after adding all functional and social risk factors to the model, dually enrolled beneficiaries still had higher readmission rates than non-dually enrolled beneficiaries. These findings are consistent with those from Study A showing that disparities in readmission rates by dual-enrollment status persist after accounting for the measure's current clinical risk adjustment.

Findings: These findings are consistent with the finding from Study A that disparities in readmission rates by dual-enrollment status persist after accounting for the measure's current clinical risk adjustment. Adding additional social factors to the model did not result in meaningful improvements. However, adding functional risk factors to the models explained more of the difference in readmission rates and improved *model performance. Finally, even after adding all functional and social risk factors to the model, dually enrolled beneficiaries still have higher readmission rates than non-dually enrolled beneficiaries.*

C. Prevalence of Functional Risk Factors at the Provider Level

At the hospital level, social risk was determined by the Disproportionate Share Hospital (DSH) Index, which is based on the proportion of Medicaid and Medicare beneficiaries receiving supplementary security income that a hospital sees. Hospitals in the top 20% of the DSH Index distribution are considered high-DSH, or safety-net, hospitals.

Table 7.3. Average Number of Functional Risk Factor Indicators per Beneficiary by Hospital Type

	AMI		Heart Failure		Pneumonia		THA/TKA		COPD	
Variable	High DSH	Other	High DSH	Other	High DSH	Other	High DSH	Other	High DSH	Other
Frailty-Related Diagnoses	1.19	1.07	1.56	1.51	1.59	1.47	0.75	0.59	1.39	1.21
Functional Dependence	4.97	4.56	5.99	5.87	5.60	5.33	3.76	3.59	5.42	5.12
Mental, Behavioral & Neurodevelopmental Disorders	0.80	0.69	0.89	0.83	1.04	0.96	0.55	0.46	1.32	1.23
Potentially Disabling Conditions	2.19	2.00	2.53	2.42	2.56	2.40	1.52	1.35	2.78	2.65

Note: High DSH = hospitals in the top 20% by DSH. AMI=acute myocardial infarction. COPD=chronic obstructive pulmonary disease. DSH=disproportionate share index; THA/TKA=total hip arthroplasty/knee arthroplasty.

Findings: Medicare beneficiaries admitted to high-DSH or safety-net hospitals were more likely to have more functional risk factor indicators than beneficiaries at other hospitals across the five condition-specific readmission measures.

D. Associations between Functional Risk Factors, Existing Social Risk Factors, and Provider Performance

To understand whether a provider's share of dually enrolled beneficiaries may contribute to poorer performance, the next analysis evaluated the probability of readmission for any beneficiary discharged from a hospital with a high DSH Index compared to beneficiaries discharged from other hospitals. The episode-level[a] models included the high-DSH hospital effect with 1) no risk adjustment, 2) with the condition-specific readmission measures risk adjustment, 3) with adjustment for additional functional risk factors, and 4) with adjustment for additional social risk factors (Table 7.4). On average, beneficiaries discharged from high-DSH hospitals had 9-16% higher odds of readmission than other beneficiaries, depending on the cohort. After accounting for the measure risk adjustment (age and comorbidities), these beneficiaries still had 5-11% higher odds of readmission than beneficiaries discharged from other

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[a] A care episode includes the period from three days prior to the index hospitalization to 30 days post-discharge.

hospitals, but this difference was no longer statistically significant for THA/TKA. Additionally accounting for social risk factors reduced this disparity to 1-7%, and the difference was no longer statistically significant for the AMI, pneumonia, or THA/TKA conditions. Accounting for additional functional risk factors did not meaningfully change the odds ratios obtained through current clinical risk adjustment. These findings differ from those obtained from the models evaluating the effect of individuals' dual enrollment on readmission; rather, the models used, which involve episode-level analyses of condition-specific readmission measures, suggest that accounting for social risk factors would more significantly impact high-DSH hospitals than accounting for functional risk factors.

Table 7.4. Association between High-DSH Hospitals and Readmission

Model	High-DSH Hospital Odds of Readmission				
	AMI	Heart Failure	Pneumonia	THA/TKA	COPD
Raw Difference	**1.16**	**1.15**	**1.09**	**1.11**	**1.12**
Measure Risk Adjustment (RA) Only	**1.06**	**1.11**	**1.05**	1.05	**1.09**
RA + Social Risk Factors	1.01	**1.07**	1.02	1.02	**1.06**
RA + Functional Risk Factors	**1.06**	**1.11**	**1.05**	1.04	**1.08**
RA + Functional Risk Factors + Social Risk Factors	1.01	**1.07**	1.03	1.02	**1.07**

Notes: Bolded odds ratios are statistically significant at $p<0.05$. All models include hospital random effects. Social risk factors include: rurality (living outside a metropolitan statistical area (MSA)), race/ethnicity (Black, Hispanic, White, other), ZIP code median income, social deprivation index (SDI), and social capital index). Functional risk factors include: frailty-related diagnoses; functional dependence; mental, behavioral and neurodevelopmental disorders; potentially disabling conditions; and disabled as the original reason for Medicare enrollment. AMI=acute myocardial infarction. COPD=chronic obstructive pulmonary disease. DSH=disproportionate share hospital index; THA/TKA=total hip arthroplasty/knee arthroplasty.

Findings: Accounting for the measure risk adjustment and social risk factors eliminates the disparity for 3 of the 5 conditions. In contrast, functional risk factors do not affect the hospital level disparity.

E. Policy Simulations: Impact on Hospitals' Performance and Penalties

In October 2017, the Hospital Readmissions Reduction Program (HRRP), added an additional measure, readmissions after coronary artery bypass graft (CABG).[4] Additionally, beginning in October 2018, penalties are assessed within peer groups, with a hospital's performance is compared to other hospitals with a similar proportion of patients who are dually eligible for Medicare and full-benefit Medicaid.[5] Under the HRRP, hospitals are penalized up to 3% of their base payments depending on their readmission performance across the conditions.

The policy simulations in this analysis evaluated the impact of including additional social and functional risk factors under the original program and the new peer group methodology. This analysis only included five condition-specific measures; it did not include the new CABG readmission rate. It included six policy options, three under the original program and another three under the peer group methodology.

Under the original program:

1. Adding dual-enrollment status in the risk adjustment
2. Adding functional risk factors (frailty-related diagnoses; functional dependence; mental, behavioral and neurodevelopmental disorders; and potentially disabling conditions) in the risk adjustment
3. Adding dual-enrollment status and functional risk factors in the risk adjustment

Under the peer group methodology:

4. Adding dual-enrollment status in the risk adjustment
5. Adding additional functional risk factors (frailty-related diagnoses; functional dependence; mental, behavioral and neurodevelopmental disorders; and potentially disabling conditions) in the risk adjustment
6. Adding dual-enrollment status and functional risk factors in the risk adjustment

These policy simulation analyses differed from prior measure-level analyses, which examined all social risk factors and included them in the risk-adjustment policy simulations. In these beneficiary-level analyses, dual enrollment was the key explanatory variable of interest to understand whether other social risk or functional risk factors explained poorer outcomes and higher spending.

Of the 3,155 Medicare hospitals, 607 hospitals were classified in this study as high-DSH hospitals. The average Medicare base Medicare Severity-Diagnosis Related Group (MS-DRG) payments for high-DSH hospitals was $26.3 million in 2016 compared with $27.3 for other hospitals. Across the five conditions targeted by the HRRP, high-DSH hospitals had fewer cases compared with other hospitals and therefore lower base MS-DRG payments for each condition (see table in the appendix to this chapter).

Under the original program, although high-DSH hospitals had lower scores on the condition-specific readmission measures, they had similar penalties under the HRRP (top panel of Table 7.5). Adjusting for dual-enrollment status reduced both the penalty and proportion penalized for high-DSH hospitals, without changing other hospitals. However, adjusting for functional risk did little to change penalties for either type of hospital.

Under the current peer group methodology, the program assigns penalties within hospital peer groups based on the proportion of dually enrolled patients. High-DSH hospitals have smaller penalties and a smaller proportion are penalized than other hospitals (bottom panel of Table 7.5). Under the new methodology, both the proportion of high-DSH hospitals penalized and their average penalty were lower than with the original methodology, while the penalty amount and proportion of other hospitals penalized was higher. Even with these changes, adjusting measures for patient dual enrollment further decreased penalties for high-DSH hospitals (but not other hospitals), while adjustment for functional risk did not change penalties for either group.

Findings: Overall, about three-quarters of all hospitals receive HRRP penalties under the original and revised peer group methodology. Adding the peer group methodology to the HRRP reduced the average *size of penalties for high-DSH hospitals by $26,000 and increased penalties for other hospitals. The peer group methodology also resulted in slightly reduced the proportion of high-DSH hospitals penalized, with 7% fewer safety-net hospitals penalized than other hospitals. Policy simulations show adjusting the measures for patient dual-enrollment status would further help high-DSH hospitals (average penalty amount decreases by about $14,000 from $456,000 to $442,000, and about 1% fewer safety-net hospitals penalized), but functional risk adjustment would not change the size of penalties. It could be that high-DSH hospitals' characteristics (such as overall resources, financial margins, or uncompensated care) explain the hospital level higher readmission rates, rather than the characteristics of the dual enrollees.*

Table 7.5. Risk Adjustment Policy Simulations for the Hospital Readmissions Reduction Program

	Current CMS Measure			Dual Enrollment Adjustment Only			Functional Risk Adjustment Only			Both		
	High-DSH	Other	Diff	High-DSH	Other	Diff	High-DSH	Other	Diff	High-DSH	Other	Diff
Original Methodology												
Providers Penalized (%)	75.3	76.5	-1.2	74.1	76.7	-2.6	74.1	77.1	-2.9	73.5	77.0	-3.5
Average Penalty (%)	1.47	1.48	-0.01	1.38	1.48	-0.10	1.45	1.47	-0.01	1.40	1.47	-0.07
Average Penalty ($)	482,000	487,000	-6,000	458,000	491,000	-34,000	479,000	484,000	-5,000	462,000	487,000	-25,000
Peer Group Methodology												
Providers Penalized (%)	73.1	79.7	**-6.6**	73.3	79.7	**-6.4**	73.5	80.0	**-6.5**	73.3	79.9	**-6.6**
Average Penalty (%)	1.34	1.53	**-0.19**	1.29	1.52	**-0.23**	1.32	1.51	**-0.19**	1.29	1.51	**-0.21**
Average Penalty ($)	456,000	494,000	-38,000	442,000	495,000	-54,000	451,000	491,000	-40,000	443,000	492,000	-49,000
Difference between Original and Peer Group Methodology												
Difference from Original Method ($)	-26,000	7,000		-16,000	4,000		-28,000	7,000		-19,000	50,000	

Notes: Bolded differences between high-DSH and other hospitals are statistically significant at $p<0.05$. Average penalty for each hospital type (High-DSH, Other) is shown and the difference is calculated as High-DSH minus Other Hospitals. The last row shows the difference between the current HRRP, which uses the peer group methodology, and the original program (difference average penalty = peer group minus original methodology). The peer group methodology resulted in smaller average penalty for high-DSH hospitals as evidenced by the negative difference. CMS=Centers for Medicare & Medicaid Services; DSH=disproportionate share hospital index.

F. Summary

Table 7.6. Summary of Key Findings of Beneficiary and Provider Analyses of Condition-Specific Readmission Measures

Characteristic	Original HRRP	Current Peer Group HRRP
Program Features	Penalties based on hospitals with excess readmission ratios. Performance benchmark is based on the average ratio across all hospitals	Penalties calculated within each of the five peer groups. Peer groups determined based on share of dually enrolled patients. Performance benchmark is based on the average ratio of readmissions within the peer group.
Penalties on Safety-Net Hospitals	More likely to be penalized than other hospitals Similar penalties (dollar amount)	Fewer safety-net hospitals penalized Lower average penalty amount for safety-net hospitals
Policy Simulations	**Original HRRP**	**Current Peer Group HRRP**
Adjusting for Dual Enrollment	Reduces proportion of safety-net hospitals penalized and decreases penalty amount	Does not reduce proportion of safety-net hospitals penalized but does decrease penalties for safety-net hospitals
Adjusting for Functional Risk	No change from current policy	No change from current policy
Adjusting for Both Dual Enrollment & Functional Risk	Same as impact of adjusting for dual enrollment	Same as impact of adjusting for dual enrollment

HRRP=Hospital Readmissions Reduction Program

IV. All-Cause Hospital Readmission

The all-cause hospital readmission measure evaluates risk-standardized, all-condition, all-cause hospital readmissions within 30 days of hospital discharge. Previously included in the physician Value Modifier (VM) program, this measure is currently used to evaluate the readmission rate at the physician or group level in the Merit-based Incentive Payment System (MIPS) program as well as for public reporting and Star Ratings at the hospital level. It is a mandatory measure in the MIPS program for practices with more than 15 clinicians and 200 episodes and is included in the MIPS quality performance category along with at least six additional quality measures submitted by clinicians. The hospital version of this measure, all-cause hospital readmission, is currently reported in the Hospital Inpatient Quality Reporting Program (HIQR) but is not part of the Hospital Readmissions Reduction Program (HRRP).

All-cause hospital readmission rates are calculated separately across five cohorts (surgical, medical, cardiorespiratory, cardiovascular, and neurology) based on the diagnosis for the original hospital admission, and then combined into a single readmission rate. In the physician practice setting, beneficiaries are attributed to a physician group if they receive the plurality of their primary care from that group, and admissions are aggregated over three years. A physician group's readmission rate is included in the MIPS quality category if the group includes at least 16 clinicians and has at least 200 attributed hospital admissions. Measures are scored by deciles (1-10) based on the provider's performance ranking compared to the national average benchmark. The quality performance category is about half of the total MIPS score (weighted 50-60%).

Study A evaluated the all-cause readmission measure as part of the physician VM program and also applied the all-cause hospital readmission measure to the HRRP in policy simulations. It found that dually enrolled and medically complex beneficiaries were more likely to be readmitted within 30 days of hospital discharge, even after risk adjustment. Study A also showed that practices and hospitals with a higher proportion of dually enrolled beneficiaries had higher risk-adjusted readmission rates, even after accounting for individuals' dual-enrollment status. Practices with a high proportion of medically complex patients also had higher readmission rates.

This analysis included all physician practices whether or not they met the MIPS threshold of more than 15 clinicians and 200 episodes. It did not calculate the hospital version of the measure or examine it at the provider level.

A. Prevalence of Beneficiary Functional Risk factors

Over 5.5 million hospital admissions from 2012-2015 were included, with approximately 22% for dually enrolled beneficiaries. These dually enrolled beneficiaries were more likely to be racial or ethnic minorities and more likely to be originally entitled to Medicare due to a disability. They also had higher readmission rates than other Medicare beneficiaries. Moreover, the dually enrolled beneficiaries were more likely to be admitted to the hospital in the first place, with 25% having a hospital admission compared to 15% of other beneficiaries.[6]

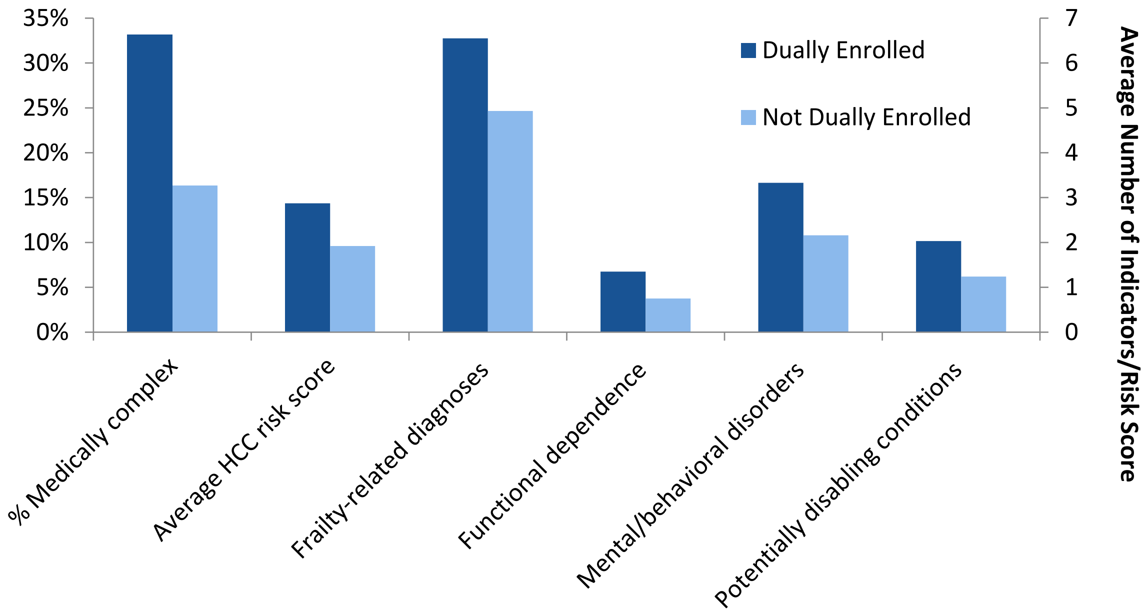
Table 7.7. Characteristics of Beneficiaries Included in the All-Cause Hospital Readmission Measure by Dual-Enrollment Status

Variable	All Beneficiaries	Dually Enrolled	Not Dually Enrolled
Number of Hospital Admissions	5,687,790	1,239,199	4,448,591
Percentage of Hospital Admissions		21.8%	78.2%
Readmission Rate	15.5%	18.4%	14.8%
Age (mean)	79	78	79
Male	42.8%	33.0%	45.6%
Race/Ethnicity			
Black	9.3%	19.4%	6.4%
Hispanic	4.7%	12.8%	2.4%
White	83.0%	61.3%	89.0%
Other/Unknown	3.1%	6.5%	2.1%
Dually Enrolled	21.8%	100.0%	0.0%
Originally Entitled to Medicare Due to Disability	15.1%	28.1%	11.4%

Note: Based on admissions between 2012 and 2015.

Dually enrolled beneficiaries are also less healthy on average. They were more likely to be medically complex and to have more comorbid conditions and functional risk factors on average.

Figure 7.3. Medical and Functional Risk by Dual-Enrollment Status in the All-Cause Hospital Readmission Measure Cohort



Note: Medically complex is HCC risk scores in the highest 20% among stays included in the measure. HCC=hierarchical condition category, a count of comorbid conditions.

Prevalence of indicators of each of the four functional risk factors (frailty-related diagnoses; functional dependence; mental; behavioral and neurodevelopmental disorders; and potentially disabling conditions) is shown in the appendix to this chapter. Dually enrolled beneficiaries were more likely to have each of the 13 indicators for frailty-related diagnoses. For the functional dependence factor, dually enrolled beneficiaries were more likely to have 18 of 20 indicators. They were also more likely to have all but one of the mental, behavioral and neurodevelopmental disorders indicators, and all but two of the indicators for potentially disabling conditions.

Findings: This analysis showed that dually enrolled beneficiaries were less healthy on average, as measured by comorbidities and functional risk, than other beneficiaries who are hospitalized.

B. Associations between Functional Risk Factors, Social Risk Factors, and Beneficiary Outcomes

To understand whether patient characteristics, rather than differences between hospitals, influence outcomes, the next analysis used a random-effects model to determine the within-provider odds of being readmitted within the first 30 days after hospital discharge for dually enrolled beneficiaries compared to non-dually enrolled beneficiaries attributed to the same physician group. The models included 1) the dual-enrollment effect with no risk adjustment, 2) the readmission measure risk adjustment (age and co-morbidities), 3) adjustment for additional functional risk factors, 4) adjustment for additional social risk factors, and 5) adjustment for both functional and social risk factors (Table 7.8). This analysis found that including additional social risk factors did not improve the models meaningfully and only slightly reduced the dual-enrollment effect. However, adding functional risk factors to the models improved the model predictive power and accounted for some of the difference in readmission rates between dually enrolled and other beneficiaries. These findings are consistent with Study A's finding that disparities in readmission rates by dual-enrollment status persist after accounting for a measure's current clinical risk adjustment.

On average, dually enrolled beneficiaries had 19-52% higher raw odds of being readmitted than other beneficiaries, depending on the cohort. After risk adjustment for age and comorbidities, dually enrolled beneficiaries had 8-20% higher odds of readmission than other Medicare beneficiaries. The risk-adjustment models correctly predicted readmissions for 65-71% of beneficiaries (c-statistics, Table 7.8). Compared with the raw, unadjusted rates of readmission, the clinical risk adjustment reduced the odds of readmission among dually enrolled beneficiaries, but a dual-enrollment effect persisted.

Accounting for social risk factors in the model only slightly reduced the dual-enrollment effect and did not change the predictive power of the models. However, accounting for functional risk factors had a greater effect on reducing the dual-enrollment effect; dually enrolled beneficiaries became only 2-8% more likely to be readmitted than other Medicare beneficiaries when these other factors were included, and the predictive power of the model marginally increased to 67-73%. Including both social and functional risk factors did not further add to the predictive power of the model compared with adding functional risk factors.

Table 7.8. Association between Dual Enrollment and All-Cause Hospital Readmission

Model	Dually Enrolled Beneficiary Odds of Readmission by Cohort									
	Surgical		Medical		Cardio-respiratory		Cardio-vascular		Neurology	
	OR	C	OR	C	OR	C	OR	C	OR	C
Raw Difference	1.52		1.19		1.27		1.41		1.27	
Measure Risk Adjustment (RA) Only	1.18	0.71	1.08	0.66	1.14	0.65	1.20	0.68	1.14	0.66
RA + Social Risk Factors	1.15	0.71	1.07	0.66	1.12	0.65	1.17	0.68	1.12	0.66
RA + Functional Risk Factors	1.06	0.73	1.02	0.68	1.07	0.67	1.08	0.70	1.06	0.69
RA + Functional Risk Factors + Social Risk Factors	1.05	0.73	1.01	0.68	1.06	0.67	1.07	0.70	1.05	0.69

Notes: All odds are statistically significant at $p<0.05$. All models include TIN random effects. Social risk factors include: rurality (living outside a metropolitan statistical area (MSA)), race/ethnicity (Black, Hispanic, White, other), ZIP code median income, social deprivation index (SDI), and social capital index). Functional risk factors include: frailty-related diagnoses; functional dependence; mental, behavioral and neurodevelopmental disorders; potentially disabling conditions; and disabled as the original reason for Medicare enrollment. TIN=tax identification number; OR=odds ratio; C=c-statistic.

To illustrate the relationship between functional risk factors and readmission, the appendix to this chapter shows the odds ratios for the potentially disabling conditions in the Risk Adjustment (RA) + Functional Risk Factors model for the medical cohort. Of the four groups of functional risk factors, potentially disabling conditions were more strongly associated with the higher risk of all-cause readmission. Of the 33 indicators for this functional risk factor, 27 were associated with statistically significantly higher odds of readmission, two with lower odds, and four did not have a statistically significant relationship to readmissions. These findings show that for readmissions in the medical cohort, increased functional risk is generally associated with worse health outcomes, and functional and social risk are independently associated with higher readmission rates.

Findings: These findings are consistent with the finding from Study A that disparities in readmission rates by dual-enrollment status persist after accounting for the measure's current clinical risk adjustment. Adding additional social risk factors to the model did not improve the models meaningfully and only slightly reduces the dual-enrollment effect. However, adding functional risk factors to the models improves the model predictive power and accounts for some of the difference in readmission rates between dually enrolled and other beneficiaries.

C. Prevalence of Functional Risk Factors at the Provider Level

Table 7.9. Average Number of Functional Risk Factor Indicators per Beneficiary by Practice Type

Functional Risk Factor	All Practices N=85,591	High-Dual Practices N=17,066	Other N=118,549	Difference
Frailty-Related Diagnoses	1.04	1.41	0.94	0.5
Functional Dependence	4.38	5.30	4.15	1.2
Mental, Behavioral, and Neurodevelopmental Disorders	0.72	1.01	0.65	0.4
Potentially Disabling Conditions	2.03	2.63	1.88	0.7

Note: High-dual practices are in the top 20% by proportion of dually enrolled beneficiaries.

This analysis showed that Medicare beneficiaries attributed to high-dual practices have more functional risk factor indicators than beneficiaries attributed to other practices across all five cohorts of the all-condition readmission measure, although the difference was greater for particular mental, behavioral or neurodevelopmental disorders and potentially disabling conditions. Beneficiaries attributed to high-dual practices have 0.5 more frailty-related diagnoses, on average, than beneficiaries attributed to other practices, larger than the difference between safety-net and other hospitals for the condition-specific readmission measure.

Findings: Medicare beneficiaries attributed to high-dual practices had more functional risk factor indicators than beneficiaries attributed to other practices.

D. Associations between Functional Risk Factors, Social Risk Factors, and Provider Performance

To understand whether a provider's share of dually enrolled beneficiaries may be associated with worse performance, the next analysis evaluated the probability of all-cause hospital readmission for any hospitalized beneficiary attributed to a practice treating a high proportion of dually enrolled patients compared to beneficiaries attributed to other practices. Its episode-level models included the high-dual practice effect 1) with no risk adjustment, 2) with the measure risk adjustment, 3) with adjustment for additional functional risk factors, 4) with adjustment for additional social risk factors and 5) with adjustment for both functional and social risk factors (Table 7.10).

On average, beneficiaries attributed to high-dual practices had 28-53% higher odds of being readmitted than other beneficiaries, depending on the cohort. After measure risk adjustment (age and comorbidities), these beneficiaries still had 18-26% higher odds of readmission than beneficiaries attributed to other practices. Additionally accounting for social risk factors reduced this disparity to 15-22%, while accounting for functional risk factors further reduced it to 10-17%. When both social and functional risk factors were added to the measure risk adjustment, the disparity was slightly less at 9-15%.

Table 7.10. Association between High-Dual Practices and All-Cause Hospital Readmission

Model	**High-Dual Practice Odds of Readmission**				
	Surgical	Medical	Cardio-respiratory	Cardio-vascular	Neurology
Raw Difference	**1.53**	**1.28**	**1.29**	**1.38**	**1.36**
Measure Risk Adjustment (RA) Only	**1.21**	**1.17**	**1.18**	**1.21**	**1.26**
RA + Social Risk Factors	**1.18**	**1.15**	**1.15**	**1.18**	**1.22**
RA + Functional Risk Factors	**1.10**	**1.11**	**1.12**	**1.11**	**1.17**
RA + Functional Risk Factors + Social Risk Factors	**1.09**	**1.10**	**1.10**	**1.09**	**1.15**

Notes: All odds are statistically significant at $p<0.05$. All models include TIN random effects. Social risk factors include: rurality (living outside a metropolitan statistical area (MSA)), race/ethnicity (Black, Hispanic, White, other), ZIP code median income, social deprivation index (SDI), and social capital index). Functional risk factors include: frailty-related diagnoses; functional dependence; mental, behavioral and neurodevelopmental disorders; potentially disabling conditions; and disabled as the original reason for Medicare enrollment. TIN=tax identification number.

Findings: These episode-level analyses are consistent with the models evaluating the effect of dual enrollment on readmission and indicate that practices serving a large proportion of dually enrolled beneficiaries have higher readmission rates across all of their patients. The findings show that adjusting the all-cause readmission measure by accounting for additional functional risk factors and social risk factors meaningfully reduce but do not eliminate the difference between high-dual and other practices.

E. Policy Simulations

This analysis evaluated the impact of including additional social and functional risk factors to the measure risk adjustment as well as its the impact on provider-level performance on readmissions and relative ranking. Specifically, it considered three policy options:

1. Adding dual-enrollment status in the risk adjustment
2. Adding functional risk factors (frailty-related diagnoses; functional dependence; mental, behavioral and neurodevelopmental disorders; and potentially disabling conditions) in the risk adjustment
3. Adding dual-enrollment status and functional risk factors in the risk adjustment

These results, shown in Table 7.11, indicate that adjusting for social and/or functional risk makes little difference in average readmission rates. However, adjusting for functional risk improves the rankings for high-dual practices and moves other practices to lower rankings. Adjusting for social risk using dual-enrollment status improves high-dual practices' rankings, without changing other practices much. (Note: This policy simulation did not show the overall impact of these adjustments on the total MIPS score and payment adjustment.)

Findings: Adjusting the all-cause readmission measure for functional risk factors, or both patient dual enrollment and functional risk factors, would further improve the rankings of high-dual physician practices. Adjusting for dual-enrollment status alone would have a smaller, but still positive, impact on the rankings of high-dual practices.

Table 7.11. Provider Performance and Rankings on the All-Cause Hospital Readmission Measure

	Current CMS Measure			Adjust for Dual Enrollment Only			Adjust for Functional Risk Only			Adjust for Dual Enrollment and Functional Risk		
	High-Dual TINs	All Other TINs	Diff	High-Dual	Other	Diff	High-Dual	Other	Diff	High-Dual	Other	Diff
Average Practice Risk-adjusted Readmission Rate (lower is better)	15.7%	15.5%	0.2%	15.6%	15.5%	0.1%	15.6%	15.5%	0.1%	15.6%	15.5%	0.1%
Average Percentile Ranking (lower is better)	54.5	49.5	5.0	52.8	49.9	2.8	52.7	50.0	2.7	52.2	50.1	2.1
Ranking Improves by 5+ Percentiles				5.3%	0.3%		16.1%	8.9%		17.4%	8.8%	
Ranking Worsens by 5+ Percentiles				0.0%	1.1%		6.9%	11.4%		5.7%	11.9%	

CMS=Centers for Medicare & Medicaid Services; TIN=tax identification number.

F. Summary

Table 7.12. Summary of Key Findings of Beneficiary and Provider Analyses of the All-Cause Hospital Readmission Measure

	MIPS All-Cause Readmission Measure
Measure Features	Penalties based on clinicians with excess readmission ratios Performance benchmark is based on the average ratio across all clinicians attributed to the measure
Performance of High-Dual Practices	Similar average readmission rates Worse ranking for high-dual practices than other practices
Policy Simulations	
Adjusting for Dual Enrollment	Improves rankings of high-dual practices, no change to other practices
Adjusting for Functional Risk	Improves rankings of high-dual practices, lowers rankings of other practices
Adjusting for Both Dual Enrollment & Functional Risk	Improves rankings of high-dual practices

V. Medicare Spending per Beneficiary (MSPB)

The MSPB measure evaluates average spending for a care episode around an inpatient stay. Costs for each care episode are calculated using claims for Medicare Part A and B services. . An episode includes from three days prior to the index hospitalization to 30 days post-discharge, and costs are calculated using claims for Medicare Part A and B services. Spending is estimated separately for each of 25 major diagnostic conditions (MDCs) and then combined to calculate a hospital's overall MSPB ratio.

The MSPB measure is the only measure included in the Efficiency and Cost Reduction domain of the Hospital Value-Based Purchasing (HVBP) program, weighted at 25% of the Total Performance Score (TPS). For fiscal year 2019, a hospital's score is based on the 2017 performance period compared to the 2015 baseline period, with "achievement" determined by comparing the hospital's MSPB during the performance period to average episode cost during the baseline period and "improvement" determined by comparing the change in the hospital's MSPB between the baseline and performance periods.[7] As with other measures in the HVBP program, MSPB scores are based on the higher of a hospital's achievement or improvement scores. The MSPB measure is also used in the MIPS program, where an episode is attributed to the physician with the plurality of evaluation and management visits during the 30-day episode.

Study A evaluated the MSPB measure as part of the HVBP program, finding that dually enrolled beneficiaries had higher costs than average, even after clinical risk adjustment. This difference was primarily driven by post-acute spending, due to the increased likelihood of dually enrolled beneficiaries to use post-acute care and in more expensive institutional settings like skilled nursing facilities, resulting in higher spending for post-acute care. Hospitals serving large proportions of dually enrolled beneficiaries also had higher costs.

A. Prevalence of Beneficiary Functional Risk Factors

The MSPB measure includes over 5.5 million inpatient episodes, approximately one-third of those from dually enrolled beneficiaries. These dually enrolled beneficiaries were more likely to be racial or ethnic minorities and to be originally entitled to Medicare due to a disability. They also had higher average episode spending than other beneficiaries.

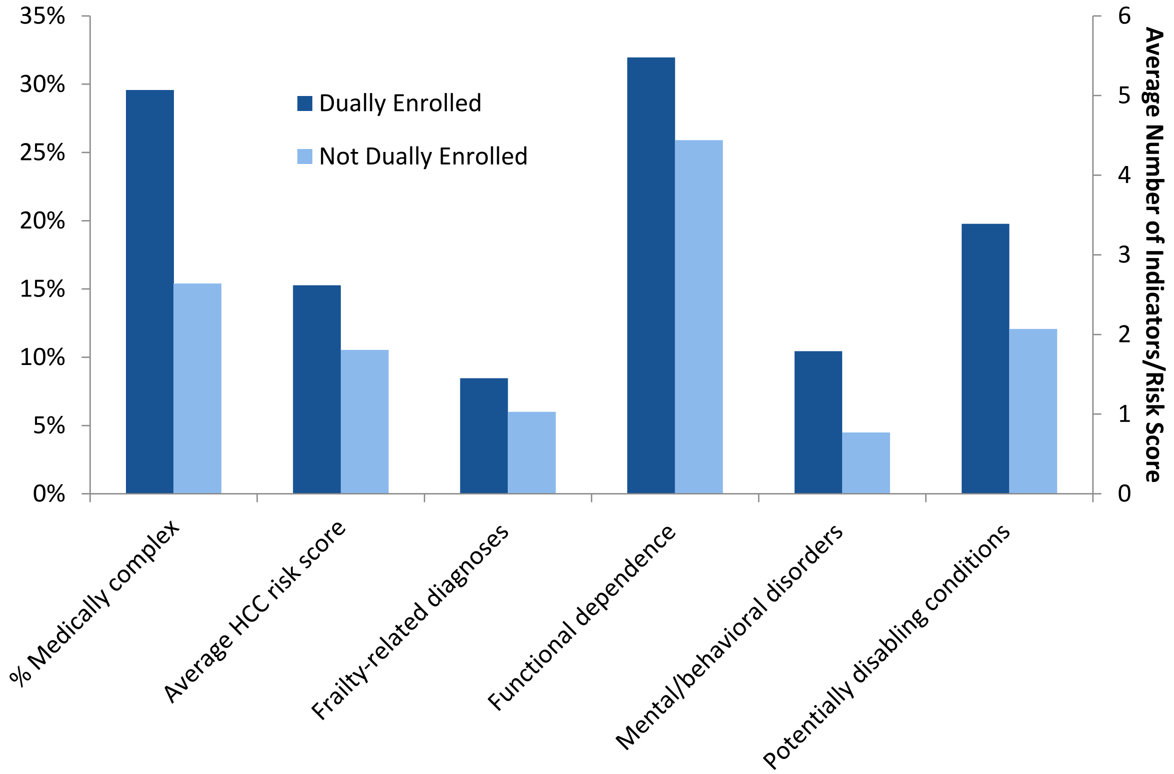
Table 7.13. Characteristics of Beneficiaries Included in the MSPB Measure by Dual-Enrollment Status

Variable	All Beneficiaries	Dually Enrolled	Not Dually Enrolled
Number of Episodes	5,557,238	1,800,109	3,757,129
Percentage of Episodes		32.4%	67.6%
Episode Spending (mean)	$20,025	$20,350	$19,870
Age (mean)	73	66	76
Male	43.6%	39.0%	45.8%
Race/Ethnicity			
Black	12.0%	22.3%	7.1%
Hispanic	6.0%	12.5%	2.8%
White	78.6%	59.8%	87.6%
Other/Unknown	3.4%	5.4%	2.4%
Dually Enrolled	32.4%	100.0%	0.0%
Originally Entitled to Medicare Due to Disability	29.8%	54.5%	17.9%

MSPB=Medicare Spending per Beneficiary

Dually enrolled beneficiaries had higher HCC risk scores, on average, than other beneficiaries, and were more likely to have two or more comorbid conditions. In addition, they had more functional risk factors: a difference greater than one on average for functional dependence; mental, behavioral and neurodevelopmental disorders; and potentially disabling conditions.

Figure 7.4. Medical and Functional Risk by Dual-Enrollment Status in the MSPB Measure Cohort



Note: Medically complex is HCC risk scores in the highest 20% among stays included in the measure. HCC=hierarchical condition category, a count of comorbid conditions; MSPB=Medicare Spending per Beneficiary

The prevalence of each indicator for the four sets of functional risk factors (frailty-related diagnoses; functional dependence; mental, behavioral and neurodevelopmental disorders; and potentially disabling conditions) is shown in the appendix to this chapter. Dually enrolled beneficiaries were more likely to have each of the 13 frailty-related diagnosis indicators and each of the 16 mental, behavioral and neurodevelopmental disorders indicators. For the functional dependence factors, dually enrolled beneficiaries were more likely to have 18 of the 20 indicators. They were more likely to have all but two of the indicators for potentially disabling conditions.

Findings: Dually enrolled beneficiaries included in the MSPB measures tend to be younger, more medically complex and less healthy than other beneficiaries.

B. Associations between Functional Risk factors, Social Risk Factors, and Beneficiary Outcomes

To understand whether patient characteristics, rather than differences between providers, influence outcomes, the next analysis used a random-effects model to determine the within-provider effect of dual enrollment on the MSPB measure. This approach showed the difference in episode spending between a dually enrolled beneficiary and a non-dually enrolled beneficiary discharged from the same hospital. The models included the dual-enrollment effect 1) with no risk adjustment, 2) with the MSPB measure risk adjustment, 3) with adjustment for additional functional risk factors, and 4) with adjustment for additional social risk factors (Table 7.14).

On average, dually enrolled beneficiaries spent 8.2% more per episode than other beneficiaries. After adjusting for age, gender, reason for index hospitalization, comorbidities, and original reason for Medicare enrollment, dually enrolled beneficiaries still spent 7.7% more than other beneficiaries. The risk adjustment model for the MSPB measure also accounted for a very small portion, 3% (pseudo R^2=0.03), of the variation in total episode costs, although it increased slightly when social risk factors (pseudo R^2=0.04) or functional risk factors (pseudo R^2=0.04) were included.

These findings confirm that dual enrollment is the most significant social risk factor among the factors available in Medicare claims. They also show that, compared to the readmission measures presented earlier, the risk adjustment included in the MSPB measure explains very little of the variation between beneficiaries, with most of the variation due to factors not included in the model, such as functional risk, social risk, physician practice, and beneficiary preferences. (Note: due to differences in how the pseudo R^2 and R^2 from other models are estimated, the values should not be compared across models.) Additionally accounting for social risk factors does not change the difference in cost between dually enrolled and other beneficiaries. On the other hand, when functional risk factors are added to the measure's risk adjustment model, the disparity between dually enrolled and other beneficiaries is reduced to 4.5%. Thus, a significant amount of the difference in episode costs between dually enrolled and other beneficiaries is actually due to unmeasured functional risk in the current risk-adjustment model.

Table 7.14. Association between Dual Enrollment and MSPB

Model	Difference in MSPB Spending for Dually Enrolled Beneficiaries		Pseudo R^2
	Coefficient	Spending Increase	
Raw Difference	**0.078**	8.2%	
Measure Risk Adjustment (RA) Only	**0.074**	7.7%	0.03
RA + Social Risk Factors	**0.075**	7.8%	0.04
RA + Functional Risk Factors	**0.045**	4.6%	0.04
RA + Functional Risk Factors + Social Risk Factors	**0.051**	5.3%	0.04

Notes: All coefficients statistically significant at $p<0.01$. Coefficient is the coefficient on the dually enrolled beneficiary variable in a gamma model. R^2 is the McFadden Pseudo R-Squared. All models include hospital random effects. Social risk factors include: disabled as the original reason for Medicare enrollment, rurality (living outside a metropolitan statistical area (MSA)), race/ethnicity (Black, Hispanic, White, other), ZIP code median income, social deprivation index (SDI), and social capital index). Functional risk factors include: frailty-related diagnoses; functional dependence; mental, behavioral and neurodevelopmental disorders; and potentially disabling conditions. MSPB=Medicare Spending per Beneficiary.

Findings: A significant amount of the difference in episode costs between dually enrolled and other beneficiaries is actually due to unmeasured functional risk in the current risk-adjustment model. They also confirm that dual enrollment is the most significant social risk factor among those factors available in Medicare claims.

C. Prevalence of Functional Risk Factors at the Hospital Level

Similar to the analyses of condition-specific readmission measures, the hospital-level analyses for MSPB determined social risk using the Disproportionate Share Hospital (DSH) Index, which is based on the proportion of Medicaid beneficiaries and Medicare beneficiaries receiving supplementary security income that a hospital sees. Hospitals in the top 20% of the DSH Index distribution are considered high-DSH or safety-net hospital hospitals.

Table 7.15. Average Number of Functional Risk Factor Indicators per Beneficiary by Hospital Type

Functional Risk Factor	All Hospitals N=3,341	High DSH Hospitals N=668	Other N=2,673	Difference
Frailty-Related Diagnoses	1.12	1.24	1.08	0.2
Functional Dependence	4.68	4.97	4.61	0.4
Mental, Behavioral and Neurodevelopmental Disorders	1.14	1.52	1.05	0.5
Potentially Disabling Conditions	2.47	2.85	2.37	0.5

Note: High DSH is hospitals in the top 20% by disproportionate share index. DSH=Disproportionate Share Hospital (Index)

Medicare beneficiaries admitted to safety-net hospitals for any hospital episode had more functional risk factor indicators, on average, than beneficiaries admitted to other hospitals, with the largest differences of 0.5 more indicators, on average, for mental, behavioral and neurodevelopmental disorders and potentially disabling conditions. This is a different pattern than the hospital episodes eligible for the condition-specific measures, where there were smaller differences in general and the largest differences (0.3-0.4 more indicators) were for functional-dependence indicators for AMI, pneumonia, and COPD episodes.

D. Associations between Functional Risk factors, Social Risk Factors, and Provider Performance

To understand whether a hospital's share of dually enrolled beneficiaries may contribute to worse performance, the next analysis examined the performance of hospitals with a higher share of dually enrolled beneficiaries and whether adjusting for social or medical risk changes hospitals' scores. In contrast to the higher costs for dually enrolled patients discussed above, hospitals with a high DSH Index have average per episode costs that are 3.2% lower than other providers. However, after risk adjusting the MSPB measure (for age, gender, reason for index hospitalization, comorbidities, and original reason for Medicare enrollment), these hospitals had similar per episode costs. Accounting for beneficiary social risk did not change this finding, but accounting for functional risk factors increased the cost by 1.4% for high-DSH hospitals. Including both social and functional risk factors in the model erased any difference between the two types of hospitals.

Table 7.16. Association between High-DSH Hospitals and MSPB Hospital Episode Spending

Model	Difference in MSPB Spending for High-DSH Hospitals	
	Coefficient	Spending Increase
Raw Difference	**-0.032**	-3.2%
Measure Risk Adjustment (RA) Only	**0.007**	0.7%
RA + Social Risk Factors	0.004	0.4%
RA + Functional Risk Factors	**0.014**	1.4%
RA + Functional Risk Factors + Social Risk Factors	0.001	0.1%

Notes: Bolded coefficients are statistically significant at $p<0.05$. Coefficient is the coefficient on the dually enrolled beneficiary variable in a gamma model. All models include hospital random effects. Social risk factors include: disabled as the original reason for Medicare enrollment, rurality (living outside a metropolitan statistical area (MSA)), race/ethnicity (Black, Hispanic, White, other), ZIP code median income, social deprivation index (SDI), and social capital index). Functional risk factors include: frailty-related diagnoses; functional dependence; mental, behavioral and neurodevelopmental disorders; and potentially disabling conditions. DSH=disproportionate share hospital: MSPB=Medicare Spending per Beneficiary

Findings: Similar to the beneficiary-level analysis, these findings suggest that some of the disparities in episode spending between high-DSH and other hospitals are actually due to differences in functional risk. Adjusting for functional risk in the measure risk adjustment would account for some of the variation by dual-enrollment status observed in other models, and would also improve the measure risk adjustment. The findings on accounting for social risk are less clear. They do not seem to make a difference when added to models including dual-enrollment status, but do after functional risk factors are included.

E. Policy Simulations

This policy simulation evaluated the impact of including functional risk factors in the MSPB measure on MIPS cost category scores. Additional analyses including the second component of the cost category (the total per capita cost measure) are in the next section.

This analysis included three policy options:

1. Adding dual-enrollment status in the risk adjustment
2. Adding functional risk factors (frailty-related diagnoses; functional dependence; mental, behavioral and neurodevelopmental disorders; and potentially disabling conditions) in the risk adjustment
3. Adding dual-enrollment status and functional risk factors in the risk adjustment

Adjusting for dual-enrollment status improved high-dual practices' rankings (Table 7.17). Nearly one third (29%) of high-dual providers had their score increase by at least 0.5 percentage points, compared with less than 2% of other providers. Adjusting for functional risk had a smaller impact on high-dual providers; only 23% had scores increase by 0.5 points. Adjusting for both dual enrollment and functional risk had the largest effect, with 32% of high-dual practices' scores increasing by 0.5 points. All the policy simulations resulted in net worsening of ranking for other providers, but for less than 5% of these practices.

Findings: These results indicate that adjusting for additional social or functional risk factors may improve measure risk adjustment.

Table 7.17. Risk Adjustment Policy Simulation for MSPB Measure in the MIPS Cost Category

	Current CMS Measure			Adjust for Dual Enrollment Only			Adjust for Functional Risk Only (Including Disabled)			Adjust for Dual Enrollment and Functional Risk		
	High-Dual TINs	All Other TINs	Difference	High-Dual	Other	Diff	High-Dual	Other	Diff	High-Dual	Other	Diff
TINs	2,333	16,596										
Average Measure Score	5.3	6	-0.7	5.6	5.9	-0.3	5.3	6	-0.7	5.6	5.9	-0.3
Percentage with improved score				28.7%	-0.3%		4.1%	-1.3%		20.1%	-4.1%	
Score improves by > 0.5				29.0%	1.5%		22.6%	18.3%		32.6%	17.6%	
Score worsens by > 0.5				0.3%	1.8%		18.6%	19.6%		12.4%	21.7%	

Note: The 2018 MIPS measure specifications for the TIN-MSPB measure risk-adjustment model used did not include the prior specialty adjustment. CMS=Centers for Medicare & Medicaid Services; MIPS=Merit-based Incentive Payment System: MSPB=Medicare Spending per Beneficiary; TIN=tax identification number.

F. Summary

Table 7.18. Summary of Key Findings from Beneficiary and Provider Analyses of the MSPB Measure

Medicare Spending per Beneficiary Measure	
Measure Features	Assesses if hospital have higher than average hospital episode spending
Performance of Safety-Net Hospitals and Dually Enrolled Beneficiaries	Dually enrolled have 7% higher spending than other beneficiaries Safety-net hospitals have nearly 1% higher spending than other hospitals
Policy Simulations	
Adjusting for Dual Enrollment	No effect on dually enrolled spending estimates, but reduces high-DSH hospital effect
Adjusting for Functional Risk	Explains higher spending estimates for dually enrolled, but increases high-DSH hospital effect
Adjusting for both Dual Enrollment & Functional Risk	Reduces higher spending estimates for dually enrolled and reduces high-DSH hospital effect

MSPB=Medicare Spending per Beneficiary

VI. Total per Capita Cost (TPCC) Measure

The TPCC measure evaluates total Medicare spending for a physician's attributed patients over the year. It captures annual risk-adjusted, price-standardized Medicare Parts A and B spending for attributed beneficiaries. The measure is currently included in the physician Merit-based Incentive Program (MIPS) and was previously included in the physician Value Modifier (VM) program. Importantly, the TPCC risk adjustment contains the HCC score, a single summary score of a beneficiary's comorbidities, rather than including each condition individually. The HCC score also accounts for a beneficiary's dual-enrollment status. Thus, the TPCC measure at least partially accounts for dual enrollment.

The TPCC is one of two required cost measures in the MIPS program, along with Medicare Spending per Beneficiary (MSPB). Both measures are calculated by the Centers for Medicare & Medicaid Services (CMS) using Medicare claims and are attributed to the physician or practice with the plurality of primary care visits during the measurement period. Under MIPS, clinicians with at least 20 attributed beneficiaries (at least 35 for MSPB) have their cost performance compared to the average cost benchmark and are assigned a score from 1-10 based on the decile of performance. The MIPS Cost category score is calculated as the sum of the scores of the two cost measures. This category was not included in the first year of the MIPS program, but was weighted 10% in second year of the program (2018 performance period) and will eventually be weighted 30% of the total MIPS score.

The TPCC measure was evaluated as part of the physician VM program in Study A, which found that dually enrolled beneficiaries had higher costs than average, even after risk adjustment. Medically complex beneficiaries had markedly higher costs than average, but after including the measure's risk adjustment had slightly lower costs than average. At the practice level, practices serving large proportions of dually enrolled or medically complex beneficiaries had higher costs than average.

A. Prevalence of Beneficiary Functional Risk Factors

Nearly 26 million Medicare beneficiaries are included in the TPCC measure, with a little less than 20% of them dually enrolled. These dually enrolled beneficiaries were more likely to be racial or ethnic minorities, more likely to be originally entitled to Medicare due to a disability, and had higher risk-adjusted spending than other beneficiaries.

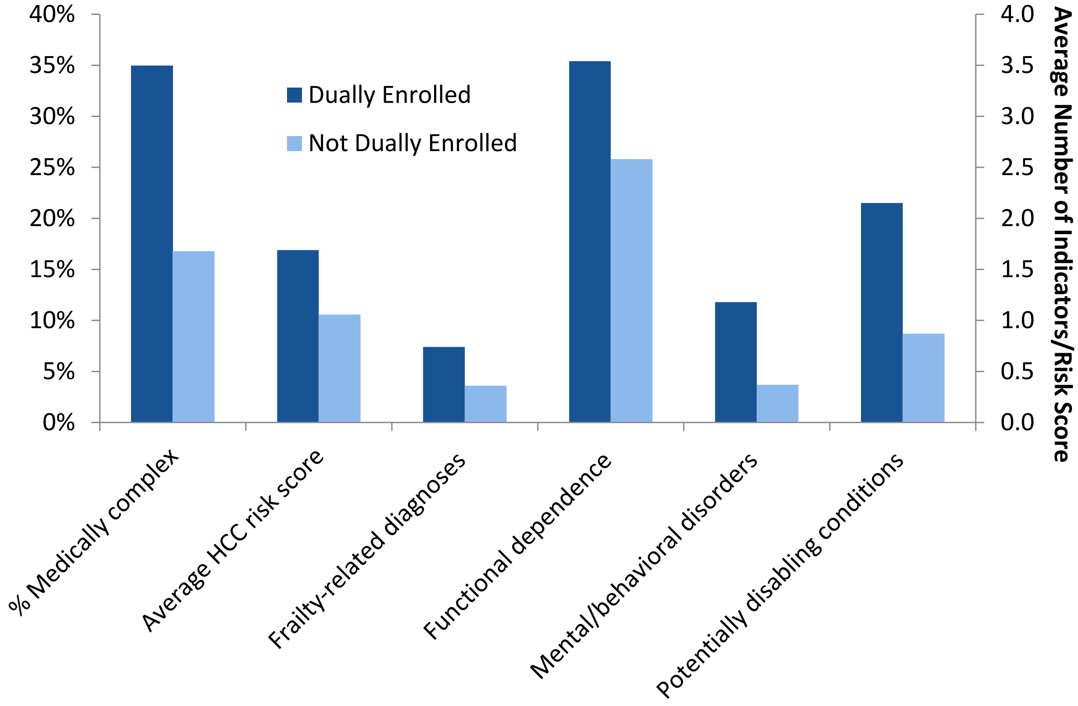
Table 7.19. Characteristics of Beneficiaries Included in the TPCC Measure by Dual-Enrollment Status

Variable	All Beneficiaries	Dually Enrolled	Not Dually Enrolled
Number of Beneficiaries	25,876,256	4,827,365	21,048,891
Percentage of Beneficiaries		18.7%	81.3%
Spending (risk-adjusted)	$11,868	$16,856	$10,724
Age (mean)	71	64	73
Male	43.0%	37.8%	44.2%
Race/Ethnicity			
Black	9.0%	19.1%	6.6%
Hispanic	5.0%	12.3%	3.4%
White	81.6%	60.6%	86.4%
Other/Unknown	4.4%	8.0%	3.5%
Dually Enrolled	18.7%	100.0%	0.0%
Originally Entitled to Medicare Due to Disability	22.4%	56.3%	14.6%

HCC=hierarchical condition category, a count of comorbid conditions; TPCC=total per capita cost

Dually enrolled beneficiaries also had more medical risk factors. They were more likely to be medically complex (35% vs. 17%), on average have a higher HCC risk score (1.7 vs. 1.1), and more likely to have two or more comorbid conditions than other beneficiaries. They also had more functional risk factors than other beneficiaries—a difference of about one additional risk factor for functional dependence; mental, behavioral and neurodevelopmental disorders; and potentially disabling conditions.

Figure 7.5. Medical and Functional Risk by Dual-Enrollment Status in the TPCC Measure Cohort



Note: Medically complex is defined as having HCC risk scores in the highest 20% among stays included in the measure. HCC=hierarchical condition category, a count of comorbid conditions; TPCC=total per capita cost

The prevalence of each of the indicators for the four sets of functional risk factors (frailty-related diagnoses; functional dependence; mental, behavioral and neurodevelopmental disorders; and potentially disabling conditions) in the TPCC measure cohort are shown in the appendix to this chapter. Dually enrolled beneficiaries were more likely to have each of the 13 frailty-related diagnosis indicators and each of the 16 mental, behavioral and neurodevelopmental disorders indicators. For the functional dependence factor, dually enrolled beneficiaries were more likely to have 18 of the 20 indicators. They were also more likely to have all but one of the potentially disabling conditions.

Findings: Dually enrolled beneficiaries tend to be younger and less healthy than other beneficiaries.

B. Associations between Functional Risk Factors, Social Risk Factors, and Beneficiary Outcomes

To understand whether patient characteristics, rather than differences between providers, influence outcomes for the TPCC measure, the next analysis used a random-effects model to determine the within-provider effect of dual enrollment on the TPCC. This approach shows the difference in cost between a dually enrolled beneficiary and a non-dually enrolled beneficiary attributed to the same provider. The models included the dual-enrollment effect 1) with no risk adjustment, 2) with the TPCC measure risk adjustment, 3) with adjustment for additional functional risk factors, and 4) with adjustment for additional social risk factors (Table 7.20).

On average, Medicare beneficiaries spent $12,000 per year, and dually enrolled beneficiaries spent an additional $6,100, for a total of $18,100. However, after risk adjustment (for HCC risk score including age, gender, original reason for Medicare entitlement (age or disability), Medicaid enrollment, and medical history), dually enrolled beneficiaries spent only $400 more than other beneficiaries. The risk adjustment accounted for 25% (R^2=.25) of the variation in costs between beneficiaries. Additionally accounting for social risk factors marginally reduced the difference between dually enrolled and other beneficiaries to $300, but did not explain more of the variation between patients. On the other hand, when the functional risk factors were added to the measure risk adjustment, dually enrolled beneficiaries had $1,000 less spending than other beneficiaries, and the functional risk factors explain an additional 10% of the variation in spending between patients.

Table 7.20. Association between Dual Enrollment and TPCC

Model	Difference in TPCC between Dually Enrolled and Other Beneficiaries	Model R^2
Raw Difference	**$6,100**	
Measure Risk Adjustment (RA) Only	**400**	0.25
RA + Social Risk Factors	**300**	0.25
RA + Functional Risk Factors	**-1,100**	0.35
RA + Functional Risk Factors + Social Risk Factors	**-900**	0.35

Notes: All effects are statistically significant at p<0.001. All models include TIN random effects. Social risk factors include: disabled as the original reason for Medicare enrollment, rurality (living outside a metropolitan statistical area (MSA)), race/ethnicity (Black, Hispanic, White, other), ZIP code median income, social deprivation index (SDI), and social capital index). Functional risk factors include: frailty-related diagnoses; functional dependence; mental, behavioral and neurodevelopmental disorders; and potentially disabling conditions. TIN=tax identification number; TPCC=total per capita cost.

Findings: Some of the disparities in TPCC observed between dually enrolled and other beneficiaries appear to be due to unmeasured medical risk. In addition, the findings from this analysis confirm that dual enrollment is the most significant social risk factor among those available in Medicare claims, and that the current method of including dual enrollment as part of the HCC risk score does not fully account for differences between dually enrolled and other patients.

C. Prevalence of Functional Risk Factors at the Provider Level

Provider level performance was evaluated at the practice level, defined by the practice's tax identification number (TIN). Groups of physicians that share a practice all bill under the same TIN, making this a practice-level analysis. Physician practices who disproportionately serve beneficiaries with social risk factors was defined as practices with the top 20% proportion of dually enrolled beneficiaries, or high-dual practices.

Findings: Medicare beneficiaries attributed to high-dual practices had more functional risk factor indicators, on average, than beneficiaries attributed to other practices. The difference in the average number of functional risk factor indicators was greater than 0.5 for potentially disabling conditions; mental, behavioral and neurodevelopmental disorders; and functional dependence, but smaller for frailty-related diagnoses.

Table 7.21. Average Number of Functional Risk Factor Indicators per Beneficiary by Practice Type

Functional Risk Factor	All Practices N=147,274	High-Dual Practices N=28,725	Other N=2,673	Difference
Frailty-Related diagnoses	0.35	0.56	0.30	0.3
Functional Dependence	2.18	2.80	2.03	0.8
Mental, Behavioral and Neurodevelopmental Disorders	0.50	1.03	0.38	0.7
Potentially Disabling Conditions	0.96	1.72	0.78	0.9

Note: High-dual practices are in the top 20% by proportion of dually enrolled beneficiaries.

D. Associations between Functional Risk factors, Social Risk Factors, and Provider Performance

To understand if a provider's share of dually enrolled beneficiaries contributes to worse performance, the next analysis evaluated whether providers with a higher share of dually enrolled beneficiaries have higher spending and whether adjusting for social and additional functional risk factors changes provider performance. Physician practices serving a high proportion of dually enrolled beneficiaries have a TPCC $7,400 greater than other providers on average. Even after the measure risk adjustment (for HCC risk score including age, gender, original reason for Medicare entitlement (age or disability), Medicaid enrollment, and medical history), high-dual practices still had an average TPCC $3,000 greater than other practices, and accounting for additional social risk factors yielded the same result. Accounting for both the measure risk adjustment (for age, gender, length of last hospitalization, hospital diagnosis, number of prior hospitalizations, and comorbidities) and additional functional risk factors reduced the difference in average TPCC to $1,500 between high-dual and other practices.

Table 7.22. Association between High-Dual Practices and TPCC

Model	Difference in TPCC Between High-dual and Other Practices
Raw Difference	**$7,400**
Measure Risk Adjustment (RA) Only	**3,000**
RA + Social Risk Factors	**3,000**
RA + Functional Risk Factors	**1,500**
RA + Functional Risk Factors + Social Risk Factors	**1,700**

Notes: All effects are statistically significant at p<0.001. Social risk factors include: disabled as the original reason for Medicare enrollment, rurality (living outside a metropolitan statistical area (MSA)), race/ethnicity (Black, Hispanic, White, other), ZIP code median income, social deprivation index (SDI), and social capital index). Functional risk factors include: frailty-related diagnoses; functional dependence; mental, behavioral and neurodevelopmental disorders; and potentially disabling conditions. TPCC=total per capita cost.

Findings: Similar to the beneficiary-level analysis, then, these findings suggest that some of the observed disparities in the TPCC between high-dual and other practices are due to differences in medical risk.

Adjusting for functional risk in the measure risk adjustment would account for some of the variation by dual-enrollment status and also improve risk adjustment for this measure.

E. Policy Simulations

This analysis evaluated the impact of including functional risk factors in the two cost measures evaluated in this report (TPCC and MSPB) on MIPS cost category scores. Results from the MSPB are presented in the previous section.

It included three policy options:

1. Adding dual-enrollment status in the risk adjustment
2. Adding functional risk factors (frailty-related diagnoses; functional dependence; mental, behavioral and neurodevelopmental disorders; and potentially disabling conditions) in the risk adjustment
3. Adding dual-enrollment status and functional risk factors in the risk adjustment

1. Policy Simulation for the TPCC Measure

Under the current MIPS program, practices treating a greater proportion of dually enrolled beneficiaries had $1,700 higher spending on the TPCC measure, leading to a lower score (Table 7.23). Adjusting for functional risk alone reduced differences in TPCC from $1,700 to $1,300, and to $1,400 after adjusting for both social and functional risk factors. Adjusting for functional risk improved scores for 15% of high-dual providers, and adjusting for both functional risk and dual enrollment improved scores for 7% of high-dual providers, whereas scores worsened for other providers.

These results, together with the policy simulations for MSPB presented earlier, indicate that adjusting for additional social or functional risk factors may improve measure risk adjustment for the two cost measures. The results of the policy simulation for the MSPB measure alone (see section V, above) indicated that adjusting for dual-enrollment status improved high-dual practices' rankings, adjusting for functional risk had a smaller impact on high-dual providers, and adjusting for both dual enrollment and functional risk had the largest effect. Adjusting for dual enrollment was more impactful in the MSPB measure than the TPCC measure, likely because the HCC score (and square of the score) included in the TPCC measure partly captures the effect of dual-enrollment status on spending. Adjusting for functional risk had a greater impact on the TPCC measure than the MSPB measure.

Findings: Adjusting for dual enrollment alone has little impact on the disparity in scores, consistent with the earlier result that it does not change the difference in average spending at the practice level. Adjusting for dual enrollment was more impactful in the MSPB measure than the TPCC measure (see MSPB results in Table 7.17 in the previous section), likely because the HCC score (and square of the score) included in the TPCC measure partly captures the effect of dual-enrollment status on spending. Adjusting for functional risk had a greater impact on the TPCC measure than the MSPB measure.

Table 7.23. Risk Adjustment Policy Simulation for the TPCC Measure in the MIPS Cost Category

	Current CMS Measure			Adjust for Dual Enrollment Only			Adjust for Functional Risk Only (including disabled)			Adjust for Dual Enrollment and Functional Risk		
	High-Dual TINs	All Other TINs	Difference	High-Dual	Other	Diff	High-Dual	Other	Diff	High-Dual	Other	Diff
TINs	14,532	57,444										
TPCC ($) (lower is better)	$10,788	$9,035	$1,753	10,624	9,059	1,565	10,777	9,479	1,298	10,922	9,494	1,428
Average Measure Score	5.3	6.1	-0.7	5.4	6.0	-0.6	5.6	6.0	-0.4	5.5	6.0	-0.6
Percentage with improved score				0	0		15%	-6%		6.5%	-3.6%	
Score improves by > 0.5				0	0		31.6%	19.2%		28%	20.2%	
Score worsens by > 0.5				0	0		16.5%	25.5%		21.6%	23.8%	

Notes: All differences between high-dual and other TINs are statistically significant at p<0.001. CMS=Centers for Medicare & Medicaid Services; MIPS=Merit-based Incentive Payment System; TIN=tax identification number and indicates physician practices; TPCC=total per capita cost.

2. Policy Simulation for the MIPS Cost Category Score

When the scores of both cost measures (MSPB and TPCC) were combined to create the MIPS cost category score, adjusting for functional risk only had the largest impact on high-dual practices of the three options evaluated (Table 7.24), with 15% of practices improving their score compared with less than 2% when adjusting for dual enrollment only. Adjusting for both dual enrollment and functional risk factors had a smaller impact on high-dual practices: instead of 15%, only 8% had an improved ranking while 5% of practices had a worse ranking. These results are more similar to the findings for the TPCC measure than the MSPB measure, possibly because more physicians receive a TPCC score than an MSPB score since many do not have enough hospitalized patients to be evaluated on the MSPB measure.

Table 7.24. Risk Adjustment Policy Simulation for Both Cost Measures (MSPB and TPCC) in the MIPS Cost Category

	Current CMS Measure			Adjust for Dual Enrollment Only			Adjust for Functional Risk Only (including disabled)			Adjust for Dual Enrollment and Functional Risk		
	High-Dual TINs	All Other TINs	Difference	High-Dual	Other	Diff	High-Dual	Other	Diff	High-Dual	Other	Diff
N	11,719	44,868										
Average Cost Category Score	5.6	6.2	-0.6	5.7	6.2	-0.5	5.9	6.2	-0.3	5.7	6.2	-0.4
Percentage with Improved Score				1.8%	0.0%		14.8%	6.5%		8.6%	-4.5%	
Score improves by > 0.5	NA	NA		1.9%	0.1%		31.8%	18.1%		29.6%	18.9%	
Score worsens by > 0.5	NA	NA		0.0%	0.1%		17.0%	24.6%		21.1%	23.4%	

Note: The MIPS cost score is the average of the two cost measures (MSPB and TPCC) when both measures can be scored or the single score from one measure if it is the only once that can be scored. CMS=Centers for Medicare & Medicaid Services; MIPS=Merit-based Incentive Payment System: MSPB= Medicare Spending per Beneficiary; TIN=tax identification number; TPCC=total per capita cost.

Findings: These results indicate that both the individual measure and cost category scores are sensitive to the risk adjustment used and that changes to the risk adjustment can affect high-dual practices' rankings in the MIPS program. This finding is important because the relative rankings based on the total MIPS score determine the final payment adjustment factors applied.

F. Summary

Table 7.25. Summary of Key Findings from Beneficiary and Provider Analyses of the TPCC Measure

Total Per Capita Cost Measure	
Measure Features	Assesses if attributed clinician or practice has higher than average total costs of care in a year
Performance of High-Dual Providers and Dually Enrolled Beneficiaries	Dually enrolled beneficiaries have $400 higher total costs of care than other beneficiaries High-dual providers have $3,000 higher spending than other providers
Policy Simulations	
Adjusting for Dual Enrollment	No effect on dually enrolled spending estimates or high-dual providers
Adjusting for Functional Risk	Explains higher spending estimates for dually enrolled beneficiaries and reduces by half the higher spending in high-dual practices
Adjusting for both Dual Enrollment & Functional Risk	Similar effect as adjusting for functional risk alone

TPCC=total per capita cost

VII. Skilled Nursing Facility (SNF) Readmission Measure

The skilled nursing facility (SNF) 30-day all-cause readmission measure evaluates risk-standardized, all-condition, all-cause hospital readmissions within 30 days of hospital discharge for beneficiaries discharged to a SNF. It is currently the only measure in the SNF value-based purchasing program (SNF VBP). The SNF VBP began in October 2018 when it provided incentive payments based on SNF performance during the 2017 performance period compared to the 2015 baseline period.[8]

When Study A evaluated the SNF readmission measure, it found that although dually enrolled beneficiaries were more likely to be rehospitalized within the first 30 days of a SNF stay, this effect disappeared after applying the measure's clinical risk adjustment. The measure's risk adjustment includes claims-based proxies for severity of illness and worse function, such as prior nursing home use and hospital length of stay. These variables may partly capture functional risk factors, allowing for better evaluation of the effect of social risk factors. Although Study A did not find a significant dual-enrollment effect at the beneficiary level, it found a high-dual provider effect. For that reason, Study B included the SNF readmission measure as well.

A. Prevalence of Beneficiary Functional Risk Factors

Nearly 2 million Medicare beneficiaries used skilled nursing facilities and were included in the SNF readmission measure in 2014. Approximately 35% of those beneficiaries were dually enrolled. These dually enrolled beneficiaries were younger, more likely to be racial or ethnic minorities, and more likely to be originally entitled to Medicare due to a disability.

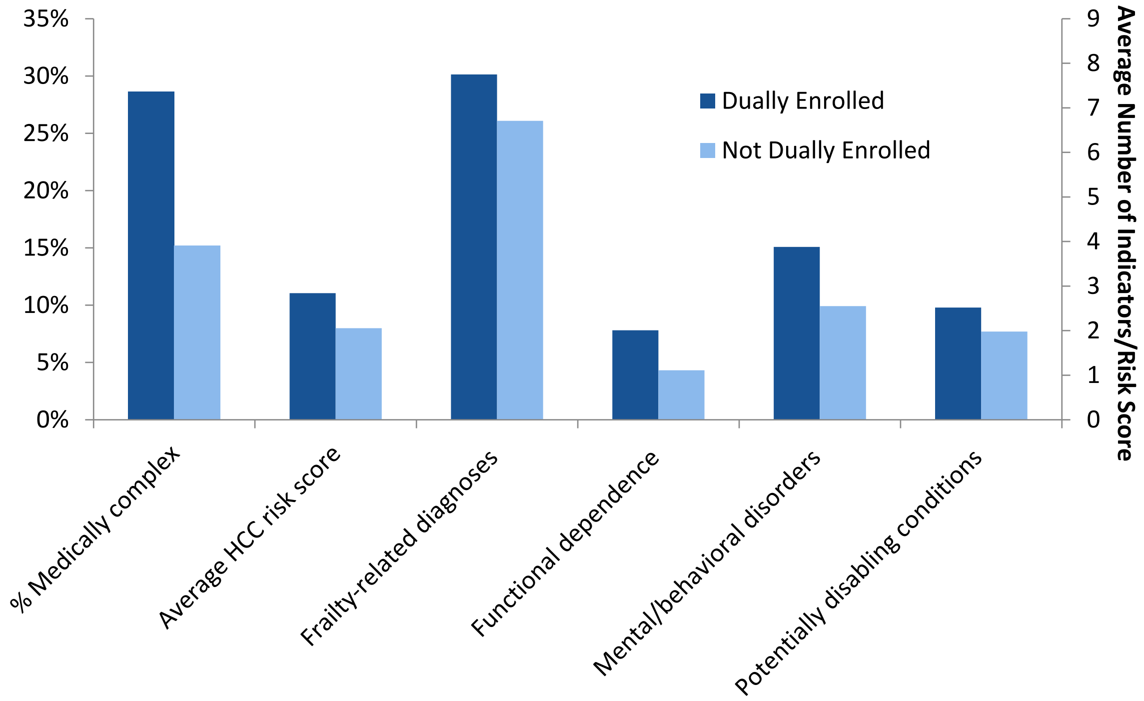
Table 7.26. Characteristics of Beneficiaries Included in the SNF Readmission Measure by Dual-Enrollment Status

Variable	All Beneficiaries	Dually Enrolled	Not Dually Enrolled
Number of SNF Stays	1,830,390	651,308	1,179,082
Percentage of SNF Stays		35.6%	64.4%
Readmission Rate	19.2%	20.8%	18.3%
Age (mean)	79	75	81
Male	37.8%	36.1%	38.7%
Race/Ethnicity			
Black	10.2%	17.8%	6.0%
Hispanic	4.2%	8.4%	1.9%
White	83.0%	69.6%	90.4%
Other/Unknown	2.6%	4.2%	1.7%
Dually Enrolled	35.6%	100.0%	0.0%
Originally Entitled to Medicare Due to Disability	22.1%	39.5%	12.6%
Social Capital Index (mean)	-0.39	-0.54	-0.30

Note: Based on 2014 SNF stays. SNF=skilled nursing facility; HCC=hierarchical condition category, a count of comorbid conditions.

Dually enrolled beneficiaries that used SNFs were also less healthy on average. They were more likely to be medically complex and to have more comorbid conditions as measured by CMS's hierarchical condition category (HCC) codes, which identify typical comorbidities such as diabetes, kidney disease, and heart failure.

Figure 7.6. Medical and Functional Risk by Dual-Enrollment Status in the SNF Readmission Measure Cohort



Note: Medically complex is HCC risk scores in the highest 20% among stays included in the measure. HCC=hierarchical condition category, a count of comorbid conditions; SNF-skilled nursing facility.

Dually enrolled beneficiaries in SNFs also had more functional risk factors than other beneficiaries, on average having 7.8 of the 13 frailty diagnoses, two of the functional dependence indicators, 3.9 of the indicators for mental, behavioral and neurodevelopmental disorders and 2.5 of the indicators for potentially disabling conditions. Beneficiaries who were using SNFs, whether dually enrolled or not, tended to have more functional risk factor indicators than those that were hospitalized, using ambulatory services, or using home health settings, reflecting the more frail patient population discharged to SNFs after a hospitalization (see comparison table in the appendix to this chapter). For the frailty-related diagnoses, dually enrolled beneficiaries were more likely than non-dually enrolled beneficiaries using SNFs to have all but one the 13 indicators. For the functional dependence factor, dually enrolled beneficiaries were more likely to have 18 of the 20 indicators. They were also more likely to have all but one of the mental, behavioral and neurodevelopmental disorders indicators, and all but two of the potentially disabling conditions. Prevalence of each indicator for each of the four sets of functional risk factors is shown in this chapter's appendix.

Findings: Dually enrolled beneficiaries using SNF are younger, more likely to be disabled or functionally impaired, and more likely to be medically complex than other beneficiaries using SNF.

B. Associations between Functional Risk Factors, Social Risk Factors, and Beneficiary Outcomes

To understand whether resident characteristics, rather than differences between skilled nursing facilities, influence outcomes, the next analysis used a random-effects model to determine the within-provider odds of being readmitted within the first 30 days of admission to SNF for dually enrolled beneficiaries compared to non-dually enrolled beneficiaries admitted to the same SNF. The models sequentially included the dual-enrollment effect 1) with no risk adjustment, 2) with the SNF readmission measure risk adjustment, 3) with adjustment for functional risk factors, and 4) with adjustment for additional social risk factors (Table 7.27).

On average, dually enrolled beneficiaries were 10% more likely to be readmitted (odds ratio of 1.09) than other beneficiaries. After accounting for the measure risk adjustment (age, gender, length of last hospitalization, hospital diagnosis, number of prior hospitalizations, and comorbidities), dually enrolled beneficiaries were 3% less likely to be readmitted (odds ratio of 0.97) than other beneficiaries. The risk-adjusted model correctly predicted readmission for 68% of beneficiaries. Additionally accounting for social risk factors did not change the odds of being readmitted or the predictive power of the model. Adding functional risk factors to the measure risk adjustment did not change the disparity in readmission rates, but the predictive power of the model marginally increased to 70%.

Table 7.27. Association between Dual Enrollment and SNF Readmission

Model	Odds of SNF Readmission for Dually Enrolled Beneficiaries	Model C-statistic
Raw Difference	**1.09**	
Measure Risk Adjustment (RA) Only	**0.97**	0.68
RA + Social Risk Factors	**0.97**	0.68
RA + Functional Risk Factors	**0.97**	0.70
RA + Functional Risk Factors + Social Risk Factors	**0.96**	0.70

Notes: All odds are statistically significant at $p<0.05$. All models include SNF random effects. Social risk factors include: rurality (living outside a metropolitan statistical area (MSA)), race/ethnicity (Black, Hispanic, White, other), ZIP code median income, social deprivation index (SDI), and social capital index). Functional risk factors include: frailty-related diagnoses; functional dependence; mental, behavioral and neurodevelopmental disorders; potentially disabling conditions; and disabled as the original reason for Medicare enrollment. SNF=skilled nursing facility.

Findings: These findings are consistent with Study A's finding that the risk adjustment already used in the SNF readmission measure accounts for most of the differences between dually enrolled and other patients. This may be due to a more extensive risk adjustment approach than other quality measures; the SNF readmission measure includes comorbidities as well as measures of prior utilization, including previous hospitalizations, length of stay, prior intensive care unit (ICU) length of stay, number of acute hospitalizations in prior year, disability as original reason for Medicare, and end-stage renal disease (ESRD).[9] These findings also suggest that the current risk adjustment accounts for most of the variation in medical risk among beneficiaries. Another reason why dually enrolled beneficiaries are not more likely to be readmitted may be that SNF setting addresses at least some social needs by including room and board.

C. Prevalence of Functional Risk Factors at the Provider Level

Skilled nursing facilities (SNF) in the top 20% of facilities by proportion of dually enrolled beneficiaries were classified as high-dual SNFs. Medicare beneficiaries admitted to these high-dual SNFs had more functional risk factors on average than beneficiaries at other facilities, with the greatest differences for mental, behavioral and neurodevelopmental disorders and potentially disabling conditions (Table 7.28). The magnitude of the differences are similar to the beneficiary-level differences.

Table 7.28. Average Number of Functional Risk Factor Indicators per Beneficiary by Facility Type

Functional Risk Factor	All SNF N=16,673	High-Dual SNF N=3,305	Other N=13,368	Difference
Frailty-Related Diagnoses	2.13	2.55	2.03	0.5
Functional Dependence	7.09	7.76	6.93	0.8
Mental, Behavioral and Neurodevelopmental Disorders	1.58	2.39	1.38	1.0
Potentially Disabling Conditions	3.14	4.19	2.88	1.3

Note: High-dual skilled nursing facilities (SNFs) are in the top 20% by proportion of dually enrolled beneficiaries. SNF=skilled nursing facility.

Findings: Medicare beneficiaries seen in high-dual SNFs have more functional risk factor indicators, on average, than beneficiaries in facilities with fewer dually enrolled beneficiaries.

D. Associations between Functional Risk Factors, Social Risk Factors, and Provider Performance

To understand whether a provider’s share of dually enrolled beneficiaries may contribute to worse performance, the next analysis evaluated the probability of readmission for any beneficiary admitted to a SNF with a high proportion of dually enrolled patients. This shows the difference in the probability of being readmitted for beneficiaries admitted to these high-dual SNFs compared to beneficiaries admitted to other SNFs. The models sequentially include the high-dual SNF effect with no risk adjustment, 2) with the SNF readmission measure risk adjustment, 3) with adjustment for functional risk factors, and 4) with adjustment for additional social risk factors (Table 7.29).

On average, beneficiaries admitted to high-dual SNFs had 24% greater unadjusted odds of being readmitted than other beneficiaries. After accounting for the measure risk adjustment (for age, gender, prior care setting, comorbidities, and original reason for Medicare enrollment), these beneficiaries still had odds 10% higher than beneficiaries admitted to other SNFs. Additionally accounting for social risk factors slightly reduced this disparity to 7% greater odds. When functional risk factors were added to the measure risk adjustment, the disparity in readmission rates was almost the same as using only the measure risk adjustment. This latter finding may partly reflect the fact that, as noted earlier, the SNF readmission measure already includes several proxies for severity of health conditions.

Table 7.29. Association between High-Dual SNFs and Readmission

Model	Odds of Readmission for High-Dual SNFs
Raw Difference	**1.24**
Measure Risk Adjustment (RA) Only	**1.10**
RA + Social Risk Factors	**1.07**
RA + Functional Risk Factors	**1.11**
RA + Functional Risk Factors + Social Risk Factors	**1.08**

Notes: All odds are statistically significant at $p<0.05$. All models include SNF random effects. Social risk factors include: rurality (living outside a metropolitan statistical area (MSA)), race/ethnicity (Black, Hispanic, White, other), ZIP code median income, social deprivation index (SDI), and social capital index). Functional risk factors include: frailty-related diagnoses; functional dependence; mental, behavioral and neurodevelopmental disorders; potentially disabling conditions, and disabled as the original reason for Medicare enrollment. SNF=skilled nursing facility.

Findings: In contrast to the models evaluating the effect of dual enrollment on readmission, these provider level analyses indicate that serving a large proportion of dually enrolled beneficiaries has an effect on the probability of readmission that is not accounted for in the measure risk adjustment. This suggests that the higher readmission rates are related either to provider quality (which previous research has demonstrated) or reflect further unmeasured differences in patient population between the high-dual and other providers.[10]

E. Policy Simulations

As noted earlier, the 30-day readmission measure is the only measure in the SNF VBP program. Under the program, all CMS payments to SNFs are reduced by 2%, and 60% of this 2% is redistributed to high-performing SNFs as incentive payments. In the data set examined, an individual SNF's performance was the higher of its achievement or improvement score based on the 2017 performance period compared to the 2015 baseline period. Achievement was scored from 0-100 and allowed the SNF's readmission rate during the performance period to be compared to the readmission rate of all SNFs during the baseline period. Improvement was scored from 0-90 and allowed comparisons between the change in the SNF's readmission rate in the baseline and the performance periods.

This analysis evaluated the impact of including functional risk factors in the SNF readmission measure on SNF VBP incentives. Specifically, it included three options:

1. Adding dual-enrollment status to the risk adjustment
2. Adding functional risk factors (frailty-related diagnoses; functional dependence; mental, behavioral and neurodevelopmental disorders; and potentially disabling conditions) to the risk adjustment
3. Adding dual-enrollment status and additional functional risk factors to the risk adjustment

Findings: SNFs treating a greater proportion of dually enrolled beneficiaries under the current program scored lower due to worse risk-adjusted readmission rates and were less likely to receive incentive payments high enough to compensate for the 2% reduction in SNF payments used to finance the program

(Table 7.30). However, on average, all SNFs had negative incentive payments, and with the difference between high-dual and other SNFs only 0.1%. Risk adjusting for dual enrollment and/or functional risk factors made almost no difference in the average SNF VBP payment adjustment regardless of dual-enrollment status.

Table 7.30. Risk Adjustment Policy Simulation for the SNF VBP

	Current CMS Measure			Adjust for Dual Enrollment Only			Adjust for Functional Risk Only			Adjust for Dual Enrollment and Functional Risk		
	High-Dual SNFs	All Other SNFS	Diff	High-Dual SNFs	All Other SNFS	Diff	High-Dual SNFs	All Other SNFS	Diff	High-Dual SNFs	All Other SNFS	Diff
N	3,125	11,197										
Average Readmission Rate (lower is better)	19.5%	19.1%	0.4%	19.6%	19.1%	0.4%	19.5%	19.1%	0.4%	19.5%	19.1%	0.4%
Average SNF Performance Score (higher is better)	48	53	-6	47	53	-6	48	53	-5	47	53	-6
Average Incentive Payment Rate (higher is better)	-0.9%	-0.7%	-0.1%	-0.9%	-0.7%	-0.2%	-0.9%	-0.7%	-0.1%	-0.9%	-0.7%	-0.2%
Average Incentive Payment Amount (higher is better)	-$11,600	-14,500	3,000	-11,700	-14,500	2,700	-11,600	-14,500	3,000	-11,800	-14,500	2,600
Providers Penalized	76%	66%	10%	77%	66%	10%	78%	68%	10%	78%	68%	10%

Note: All differences between high-dual and other SNFs are statistically significant at p<0.01. Providers Penalized are those with incentive payment rate<2%. CMS=Centers for Medicare & Medicaid Services; Diff=Difference; SNF=skilled nursing facility; SNF=skilled nursing facility; SNF VBP= Skilled Nursing Facility Value-Based Purchasing Program.

F. Summary

Table 7.31. Summary of Key Findings from Beneficiary and Provider Analyses of the SNF Readmission Measure

SNF Readmission Measure	
Program/Measure Features	Penalties based on SNFs with high rates of readmission Performance benchmark is based on the average rate across all SNFs
Performance of High-Dual SNFs and Dually Enrolled Beneficiaries	High-dual SNFs have higher average readmission rates Dually enrolled beneficiaries have lower risk of readmission
Policy Simulations	
Adjusting for Dual Enrollment	No effect in beneficiary-level analyses; reduces high-dual SNF provider effect
Adjusting for Functional Risk	No effect in beneficiary or provider-level analyses
Adjusting for Both Dual Enrollment & Functional Risk	Same as adjusting for dual enrollment

SNF=skilled nursing facility.

VIII. Home Health Agency Hospitalization or Emergency Department (ED) Use Measures

The home health agency (HHA) hospitalization or emergency department (ED) use measures evaluate unplanned admissions (either ED use without hospital admission, or hospital admission with or without ED use) during the first 60 days of a home health episode. The measures use a single multinomial logit model, meaning that both ED use and hospital admission are evaluated in the same statistical model and that each episode is either counted as ED use without hospitalization or hospital admission, but not both. These are the only two claims-based measures included in the home health value-based purchasing (HHVBP) model, comprising 35% of a HHA's total performance score (TPS). The HHVBP, which began in January 2018 with payment adjustments based on 2016 performance,[11] is a mandatory model implemented by the Center for Medicare & Medicaid Innovation (CMMI) and adjusts payments for HHAs in nine states.[12]

Study A did not evaluate this 60-day measure, but instead included measures of rehospitalization or ED use within the first 30 days of home health care for beneficiaries hospitalized prior to home health use. It found that dually enrolled and disabled beneficiaries were more likely to be rehospitalized or use ED services during the first 30 days of home health care, although CMS risk adjustment decreased the effect to some degree. Findings regarding providers serving large proportions of dually enrolled or disabled beneficiaries were mixed.

A. Prevalence of Beneficiary Functional Risk Factors

Nearly 3 million Medicare beneficiaries enrolled in home health and were included in home health ED use or hospital admission measures in 2014. A little less than 30% of those beneficiaries were dually enrolled, which is higher than in the general Medicare fee-for-service (FFS) population of approximately 18% dually enrolled.[13] These dually enrolled beneficiaries were younger, more likely to be racial or ethnic minorities, and more likely to be originally entitled to Medicare due to a disability.

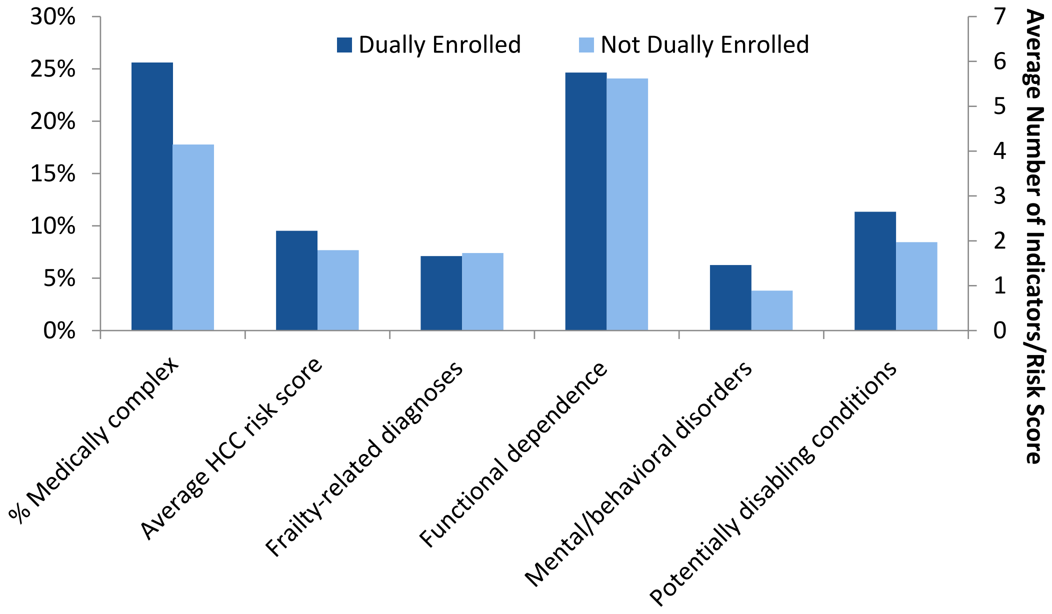
Table 7.32. Characteristics of Beneficiaries Included in the Home Health ED Use or Hospitalization Measures by Dual-Enrollment Status

Variable	All Beneficiaries	Dually Enrolled	Not Dually Enrolled
Number of HHA Stays	2,812,169	798,304	2,013,865
Percentage of HHA Stays		28.4%	71.6%
ED Use	12.2%	14.1%	11.5%
Hospitalization	15.7%	16.7%	15.3%
Age (mean)	77	71	79
Male	37.4%	33.3%	39.0%
Race/Ethnicity			
Black	11.7%	21.9%	7.6%
Hispanic	7.5%	18.9%	2.9%
White	77.7%	53.0%	87.5%
Other/Unknown	3.2%	6.2%	1.9%
Dually Enrolled	28.4%	100.0%	0.0%
Originally Entitled to Medicare Due to Disability	23.5%	45.0%	14.9%

ED=emergency department; HCC=hierarchical condition category; HHA=Home health agency.

Dually enrolled beneficiaries who used home health were also younger and less healthy on average than non-dually enrolled peers. They were more likely to be medically complex and to have more comorbid conditions than other beneficiaries and on average had more functional risk factors such as mental, behavioral and neurodevelopmental disorders and potentially disabling conditions, but slightly fewer frailty-related diagnoses.

Figure 7.7. Medical and Functional Risk by Dual-Enrollment Status in the Home Health Hospitalization or ED Use Measures Cohort



Note: Medically complex is HCC risk scores in the highest 20% among stays included in the measure. ED=emergency department; HCC=hierarchical condition category, a count of comorbid conditions.

The prevalence of indicators for each of the four additional groups of functional risk factors (frailty-related diagnoses; functional dependence; mental, behavioral and neurodevelopmental disorders; and potentially disabling conditions) are shown in the appendix to this chapter. For the frailty-related diagnoses, dually enrolled beneficiaries were actually less likely (0.2-2.5 percentage points) to have nine of the 13 indicators. For the functional dependence factor, dually enrolled beneficiaries were more likely (1-10%) to have ten of the 20 indicators. They were more likely to have all but one of the mental, behavioral and neurodevelopmental disorders indicators, and all but two of the potentially disabling conditions.

Findings: Dually enrolled beneficiaries using home health are younger and less healthy than other beneficiaries using home health services.

B. Associations between Functional Risk factors, Social Risk Factors, and Beneficiary Outcomes

To understand whether patient characteristics, rather than differences between home health agencies, influence outcomes, the next analysis used a random-effects model to determine the within-provider odds of ED use or hospital admission within the first 60 days of home health for dually enrolled beneficiaries compared to non-dually enrolled beneficiaries served by the same HHA. The models sequentially included the dual-enrollment effect 1) with no risk adjustment, 2) with the home health measure's risk adjustment, 3) with adjustment for additional functional risk factors, and 4) with adjustment for additional social risk factors (Table 7.33).

On average, dually enrolled beneficiaries had 43% higher odds of using the ED and 31% higher odds of being hospitalized within the first 60 days of home health than other beneficiaries. After applying the measures' risk adjustment (accounting for age, gender, prior care setting, comorbidities, and original reason for Medicare enrollment), dually enrolled beneficiaries still had 23% higher odds of ED use and 20% higher odds of admission than other beneficiaries. This risk adjusted model accounted for only 9% (R^2=.09) of the variation in ED use and hospital admissions between beneficiaries. Accounting for additional social risk factors did not change the likelihood of ED use or hospitalization; it also did not explain much more of the variation between patients. When the functional risk factors were added to the measures' risk adjustment, however, dually enrolled beneficiaries had 20% and 16% higher odds of using the ED or being admitted to the hospital, respectively. Including functional risk factors increased the variation explained by the model to a little over 12%.

Table 7.33. Association between Dual Enrollment and Hospital Use while Enrolled in Home Health

Model	Dually Enrolled Beneficiaries		Model R^2
	Odds of ED Use	Odds of Hospitalization	
Raw Difference	**1.43**	**1.31**	
Measures' Risk Adjustment (RA) Only	**1.23**	**1.20**	0.09
RA + Social Risk Factors	**1.23**	**1.20**	0.09
RA + Functional Risk Factors	**1.20**	**1.16**	0.12
RA + Functional Risk Factors + Social Risk Factors	**1.20**	**1.16**	0.12

Notes: All odds are statistically significant at $p<0.05$. ED use and hospitalization are estimated together in a multinomial logit model. R^2 is the Cox & Snell pseudo R^2. All models include HHA random effects. Social risk factors include: rurality (living outside a metropolitan statistical area (MSA)), race/ethnicity (Black, Hispanic, White, other), ZIP code median income, social deprivation index (SDI), and social capital index). Functional risk factors include: frailty-related diagnoses; functional dependence; mental, behavioral and neurodevelopmental disorders; potentially disabling conditions; and disabled as the original reason for Medicare enrollment.

Findings: The risk adjustment already used in the home health measures accounts for only about half of the differences in ED use or hospitalization rates between dually enrolled and other patients. The fact that there was still a disparity between dually enrolled and other beneficiaries after additional risk adjustment indicates that these additional risk factors did not explain all the differences between dually enrolled and non-dually enrolled patients. However, the findings indicate that adjusting for additional functional and social risk factors could improve this measure's medical risk adjustment to some degree.

C. Prevalence of Functional Risk Factors at the Provider Level

Provider-level performance was evaluated at the level of the home health agency for this measure. As in the other analyses at the provider level, high-dual HHAs were identified based on the top 20% share of dually enrolled beneficiaries among all home health agencies (HHAs).

Table 7.34. Average Number of Functional Risk Factor Indicators per Beneficiary by HHA Type

Functional Risk Factor	All HHAs N=11,634	High-Dual HHAs N=2,323	Other N=9,311	Difference
Frailty-Related Diagnoses	1.60	1.40	1.65	-0.3
Functional Dependence	5.43	5.16	5.49	-0.3
Mental, Behavioral & Neurodevelopmental Disorders	1.10	1.29	1.05	0.2
Potentially Disabling Conditions	2.18	2.29	2.15	0.1

Note: High-dual home health agencies (HHAs) are in the top 20% by proportion of dually enrolled beneficiaries.

Findings: In contrast to beneficiaries in other settings considered in this Report, beneficiaries served by high-dual home health agencies had fewer frailty-related diagnoses or functional dependence indicators than beneficiaries at agencies with fewer high-dual beneficiaries, and only a slightly higher number of mental, behavioral and neurodevelopmental disorders and potentially disabling conditions (Table 7.34). The prevalence of beneficiaries with functional dependence indictors was high for both groups, as this factor largely determines eligibility to receive home health services.

D. Associations between Functional Risk Factors, Social Risk Factors, and Provider Performance

To understand whether a provider's share of dually enrolled beneficiaries may contribute to worse performance, the next analysis evaluated the probability of ED use or hospitalization for any beneficiary admitted to an HHA with a high proportion of dually enrolled patients compared to beneficiaries admitted to other HHAs. The models included the high-dual HHA effect 1) with no risk adjustment, 2) with the HHA ED use or hospital admission measures' risk adjustment, 3) with adjustment for additional functional risk factors, and 4) with adjustment for additional social risk factors (Table 7.35).

On average, beneficiaries admitted to high-dual HHAs had 39% lower odds of using the ED and half the odds of being hospitalized as other beneficiaries. The odds of ED use did not change much when the measures' risk adjustment, functional risk factors, or social risk factors were included. High-dual HHAs performed better than other HHAs on these performance measures. When additional functional and social risk factors were added to the measures' risk adjustment, the odds of ED use and hospitalization for high-dual HHAs compared to other HHAs increased slightly and therefore somewhat reduced the disparity, but high-dual HHAs continued to have lower rates of ED use and hospitalization than other HHAs.

Table 7.35. Association between High-Dual HHAs and ED Use or Hospital Admission

Model	High-Dual HHA Effect	
	Odds of ED Use	Odds of Hospitalization
Raw Difference	**0.61**	**0.50**
Measures' Risk Adjustment (RA) Only	**0.63**	**0.61**
RA + Social Risk Factors	**0.65**	**0.61**
RA + Functional Risk Factors	**0.64**	**0.66**
RA + Functional Risk Factors + Social Risk Factors	**0.66**	**0.66**

Notes: All odds are statistically significant at p<0.05. ED use and hospitalization are estimated together in a multinomial logit model. All models include HHA random effects. Social risk factors include: rurality (living outside a metropolitan statistical area (MSA)), race/ethnicity (Black, Hispanic, White, other), ZIP code median income, social deprivation index (SDI), and social capital index. Functional risk factors include: frailty-related diagnoses; functional dependence; mental, behavioral and neurodevelopmental disorders; potentially disabling conditions; and disabled as the original reason for Medicare enrollment. ED=emergency department; HHA=home health agency.

Findings: In contrast to the models evaluating the beneficiary-level effect of dual enrollment on every other measures in this chapter, therefore, beneficiaries admitted to HHAs serving a large proportion of dually enrolled beneficiaries were less likely to use the ED or be admitted to hospitals. These findings suggest a protective effect for beneficiaries who use high-dual HHAs, possibly because these HHAs may provide additional services targeted to the dually enrolled population or be more attuned to the needs of this population.

E. Summary

Table 7.36. Summary of Key Findings of Beneficiary and Provider Analyses

Home Health Agency Hospitalization and ED Use	
Program Features	Penalties are based on rate of ED use without hospitalization or hospital admission within 60 days for HHAs in nine states. Measures account for 35% of a HHA's total performance score.
Performance of High-Dual HHAs and Dually Enrolled Beneficiaries	High-dual HHAs have relatively lower rates of ED use and hospitalization Dually enrolled beneficiaries have relatively higher ED use and hospitalization rates

ED=emergency department; HHA=home health agency.

IX. Key Findings

1. Medical risk, both the current risk adjustment and additional functional risk factors, is associated with poor outcomes.

Study A showed that medically complex beneficiaries were more likely to have worse health outcomes than other beneficiaries. This study (Study B) added to that analysis by assessing the role of functional risk factors, showing, for example, that beneficiaries in the medical cohort of the all-cause hospital readmission measure with functional risk factors such as potentially disabling conditions are more likely to have worse health outcomes, such as higher readmission rates.

2. Social risk is highly correlated with functional risk factors.

There is a higher prevalence of frailty, predictors of functional dependence; potentially disabling conditions; and mental, behavioral and neurodevelopmental disorders in dually enrolled beneficiaries than other Medicare beneficiaries.

Across all the measures assessed in this chapter, dually enrolled beneficiaries are more likely than other beneficiaries to have nearly every indicator across the four functional risk factors, indicating that dual enrollment is associated with greater functional risk (Table 7.37).

Table 7.37. Average Number of Indicators by Functional Risk Factor and Dual-Enrollment Status

Measure	Frailty-Related Diagnoses		Functional Dependence		Mental, Behavioral & Neurodevelopmental Disorders		Potentially Disabling Conditions	
	Dually Enrolled	Not Dually Enrolled	Dually Enrolled	Not Dually Enrolled	Dually Enrolled	Not Dually Enrolled	Dually Enrolled	Not Dually Enrolled
Condition-Specific Readmission								
AMI	1.36	0.74	5.38	3.9	1.02	0.53	2.66	1.75
Heart Failure	1.92	1.47	6.75	5.75	1.14	0.73	3.02	2.31
Pneumonia	1.98	1.38	6.40	5.12	1.40	0.82	3.16	2.21
THA/TKA	0.96	0.57	4.24	3.49	0.80	0.4	1.96	1.26
COPD	1.67	1.15	6.14	4.98	1.68	1.07	3.34	2.50
All-Cause Hospital Readmission	6.55	4.93	1.35	0.75	3.33	2.16	2.03	1.24
MSPB	1.45	1.03	5.48	4.44	1.79	0.77	3.39	2.07
TPCC	0.74	0.36	3.54	2.58	1.18	0.37	2.15	0.87
SNF Readmission	7.75	6.71	2.01	1.11	3.88	2.55	2.52	1.98
HHA ED Use/ Hospitalization	1.66	1.73	5.75	5.62	1.46	0.89	2.65	1.97

AMI=acute myocardial infarction; COPD=chronic obstructive pulmonary disease; ED=emergency department; HHA=home health agency; MSPB=Medicare Spending per Beneficiary; SNF=skilled nursing facility; THA/TKA=total hip/knee arthroplasty; TPCC=total per capital cost.

3. Accounting for functional risk generally lowers the effect of dual enrollment (and in some cases eliminates it). However, dually enrolled beneficiaries still have worse outcomes, even after accounting for functional risk factors.

Adjusting for functional risk factors improved the performance or explanatory power of the risk-adjustment model for all measures assessed in this chapter, although the amount of improvement varied across the measures. It also reduced the disparity between dually enrolled and other beneficiaries compared to the current risk adjustment methodologies. However, for most measures, there was still a significant difference in outcomes between dually enrolled and other beneficiaries, even after including functional risk adjustment.

4. **The effect of including functional risk factors varies by measure, in part due to differences in risk-adjustment models. Claims-based approaches to assessing functional risk factors are feasible and improve the explanatory power of measure risk adjustment.**

The findings from these analyses illustrate the difficulty of assessing the role of risk factors across measures, particularly when risk-adjustment approaches differ so much between the various quality and resources use measures included in Medicare's nine VBP programs. Although including functional risk adjustment generally improves the model's explanatory power and reduces the observed difference between dually enrolled and other beneficiaries' outcomes, the amount of this improvement varies across measures. This is likely due to multiple factors, including a differential effect of functional risk across measures as well as differences in existing risk-adjustment approaches across measures. For example, there is little effect in the SNF readmission measure, possibly due to the fact that patients in SNFs already have some of their functional risk factors addressed through full-time nursing facility care. The SNF measure also already adjusts for severity of health using prior health-care utilization variables. Similarly, adding functional risk to the home-health measure's risk-adjustment model has little effect because this model already accounts for functional limitations and prior health care utilization. However, for measures that currently only adjust for demographics and comorbidities, such as hospital readmission and cost, including functional risk factors to the measure's risk-adjustment model produces a larger effect.

This analysis demonstrates that claims-based approaches to capturing each of the functional risk factors are feasible and improve the risk-adjustment model of measures examined. Including functional risk would likely improve current medical risk adjustments that only use comorbidities. Including functional risk factors would also allow social risk to be assessed more accurately. This is because without accounting for functional risk, some of the observed effect of social risk may actually be due to functional risk. Additional analyses is still needed, however, to determine exactly which functional risk factors should be included.

5. **Adjusting measures for social or functional risk factors reduces the disparity between safety-net and other providers, although these adjustments have only a small effect on VBP program payment adjustments.**

For the three VBP programs evaluated in this chapter, the Hospital Readmissions Reduction Program (HRRP), Merit-Based Incentive Program (MIPS) cost category, and Skilled Nursing Facility Value-Based Purchasing Program (SNF VBP), average differences in program impacts between safety-net or high-dual providers and other providers are small. Adjusting for beneficiary dual-enrollment status and/or functional risk each affects this disparity in some, but not all programs. In the HRRP, current penalties are 0.19% lower for safety-net hospitals than other hospitals. This difference does not change with adjustment for functional risk, but increases to 0.23% after adjusting for dual-enrollment status, and to 0.21% after adjusting for both functional risk and dual-enrollment status. In the MIPS cost category, high-dual practices currently have scores 0.6 points lower (out of 10 points) than other practices. This difference falls minimally to 0.5 points after adjusting for beneficiary dual enrollment, 0.3 points after adjusting for functional risk, and 0.4 points after adjusting for both. Finally, in the SNF VBP, high-dual SNFs currently have payment reductions 0.1% greater than other SNFs, and this disparity does not change with additional risk adjustment for beneficiary dual enrollment and/or functional risk.

X. References

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Chapter 8. Survey-Based Functional and Social Risk Factors and Performance in Medicare Quality and Resource Use Measures Using the Medicare Current Beneficiary Survey (MCBS)

I. Introduction to the Medicare Current Beneficiary Survey (MCBS)

This chapter uses data from the MCBS to address the following research question: What is the association between social risk factors, medical risk factors, and patient outcomes on Medicare quality and resource use measures?

The Medicare Current Beneficiary Survey (MCBS) is a nationally representative survey of Medicare beneficiaries. The survey has been conducted annually by the Centers for Medicare & Medicaid Services (CMS) since 1991. A continuous, multi-purpose panel survey, the survey collects information on a sample of all Medicare beneficiaries, including both the aged and disabled. It focuses on health care use and expenditures and includes information on health status, access to care, insurance coverage, financial resources, and demographic characteristics of beneficiaries.

The MCBS is a longitudinal panel survey, interviewing sample persons three times a year; respondents are included in the survey for three years with an additional year of follow up. This design allows the MCBS to collect information on beneficiaries who may enter a facility, as well as those who spend down their assets until they become eligible for Medicaid. The interviews are conducted for beneficiaries living in the community or residing in long-term care facilities, using a separate questionnaire for each setting. This study used only the community portion of the MCBS because this population represents most of the Medicare population and because the survey has information about social risk factors for this population, but not for beneficiaries residing in long-term care facilities.

The MCBS sample comes from the Medicare enrollment file, oversampling under-65 persons with disabilities and the oldest-old (ages 85 and over) beneficiaries. Beneficiaries using Accountable Care Organizations are also oversampled starting in 2013. Respondents are drawn from major geographic areas representing the nation and are expanded subsequently to represent newly created ZIP code areas. Each panel consists of approximately 5,000 beneficiaries, for a total of 15,000 beneficiaries (three panels) surveyed each year. In addition, the MCBS sample is annually supplemented to account for attrition (deaths, disenrollment, and refusals) and newly enrolled beneficiaries.

A. Importance of the MCBS

The MCBS is one of the most comprehensive surveys of Medicare beneficiaries, providing information on many topics about the Medicare Program and its enrollees.[1] By using the Medicare enrollment file as its sampling frame, this survey uses a representative sample of Medicare beneficiaries. Most importantly for the purposes of this Report, it includes social and medical risk factors that are not available in Medicare claims.

Social risk factors in the MCBS include marital status, level of education, language, living alone, private insurance coverage, income, assets, and home ownership. The MCBS also asks respondents about activities of daily living (ADLs) and instrumental activities of daily living (IADLs), additional medical risk factors. Data on these social and medical risk factors are obtained from all survey respondents and do not rely on their health care utilization. In addition, health care utilization can be linked to survey responses, allowing quality and resource use measures to be evaluated and claims- and survey-based social and medical risk factors to be compared.

B. Limitations of the MCBS

With approximately 15,000 respondents annually, only two-thirds of whom are asked about their income and assets, the MCBS has a relatively small sample size. This small sample size limits the measures of quality and resource use that can be evaluated, and in practice excludes measures for services that a small proportion of beneficiaries use, such as post-acute care. Furthermore, the small sample size means that there are not enough beneficiaries receiving care from specific providers[a] to evaluate provider performance.

II. Quality and Resource Use Measures Evaluated

The following quality and resource use measures were evaluated with the MCBS:

- Total per capita cost (TPCC) used in the merit-based incentive payment program (MIPS)
- All-cause hospital readmissions used in the MIPS

These measures, both explained in detail in the Chapter 7, were selected based on the large proportion of beneficiaries included in the measures' denominators, which compensated for the small sample size of the MCBS. The TPCC measure evaluates total Medicare spending for a physician's attributed patients over the year, while the all-cause hospital readmission measure evaluates risk-standardized, all-condition, all-cause hospital readmissions within 30 days of hospital discharge. Study A found that dually enrolled beneficiaries and practices serving large proportions of dually enrolled beneficiaries had higher costs and readmission rates for these measures, even after risk adjustment.

III. Social Risk Factors

A. Social Risk Factors Available in the MCBS

The numerous social risk factors included in the MCBS were presented in Chapter 6 as part of the framework put together by the National Academies of Sciences, Engineering, and Medicine (NASEM) to identify social risk factors influencing health outcomes under Medicare's value-based payment (VBP)

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[a] Note that in this Report the term "providers" is used to indicate physicians, hospitals, dialysis facilities, nursing facilities, Medicare Advantage contracts, etc.

programs. The analyses described in this chapter used all the social risk factors from this list that are included in the MCBS, as described below.

1. Marital Status

Marital status is an important element of social relationships and can influence health utilization and outcomes, although findings in the literature have been mixed. Several review articles and studies have associated marital status with lower probabilities of injury, readmissions, and mortality.[2-6] Married individuals are more likely to have better health outcomes, including better outcomes after hip replacement surgery, lower rates of readmission, and better medication adherence.[3,7,8] Similarly, unmarried individuals (including single, widowed, and divorced individuals) are more likely to have worse outcomes, such as graft loss after heart transplantation, and increased risk of readmissions.[9,10] On the other hand, other studies have found no association between marital status and readmissions.[11,12]

Social partnership beyond formal marriage is another important social relationship considered to have potential bearing on health outcomes given the recent demographic shift in household composition and marriage. Because the MCBS includes information only on marital status but not information on partnership outside of formal marital relationships, however, it does not provide a definitive answer regarding the presence or absence of such social relationships.

The variable indicating marital status in the MCBS has five categories: married, widowed, divorced, separated, and never married. As with other studies, the analyses in this study used a binary variable for marital status, married or not married (widowed, divorced, separated, or never married). It also excluded the few beneficiaries who responded that they did not know their marital status or refused to respond.

2. Education

A beneficiary's level of education may affect health directly and indirectly. Education may directly enable individuals to understand health information, access health care, and make informed decisions that promote health.[13,14] Education's indirect effect comes from the association between education and other social factors such as employment and income (since education shapes future employment and economic resources).[14-16] Education can be measured as either completed years of schooling or educational attainment for credentials of formal schooling (e.g., degrees).[17]

The variable indicating education in the MCBS has nine categories: no schooling; nursery to 8th grade; 9th to 12th grade (but no diploma); high school graduate; vocational, technical, business, etc. degree; some college (but no degree); associate's degree; bachelor's degree; and post graduate degree. This study condensed the education categories into four categories: less than high school, high school, less than bachelor's degree, and bachelor's degree or more. It excluded the few beneficiaries who responded that they did not know their highest grade completed or refused to respond.

3. Language

Language barriers include speaking a primary language that is not English, having limited English proficiency, or needing interpreter services. Language barriers are associated with overall poor outcomes, including less access to health care, poorer health status, and more adverse health events.[16]

There are two variables related to language barriers in the MCBS: language of interview, and using a proxy interviewee because of a language problem. Language of interview has three categories: English, Spanish, and other. Proxy use is categorized as being needed either because a language problem is indicated, or not indicated ("not ascertained" and "don't know" are excluded). In this study, the variable indicating language barriers came from these two variables and had two categories: "English" and "non-English/proxy was needed because of a language problem."

4. Living Alone

Living alone is a component of social relationships and is a proxy for social isolation or loneliness, which negatively affects health.[18-20] Living alone may occasionally be susceptible to a rapid change. For example, a health event may result in parents moving to temporarily live with their children. Information on living alone can be easily collected in a clinical setting.

MCBS data contain a continuous variable indicating total number of people in the household (0 to ≥8) was used by this study to construct a binary variable indicating whether beneficiaries were living alone or not.

5. Income

Income is the most widely used indicator of economic resources, mainly because of the availability of income measures and the strong face validity of income to represent economic status.[17] Income may affect health outcomes directly by allowing people to purchase health care. In addition to this direct effect on health, income indirectly allows for better education, housing, and nutrition, which can improve health outcomes.[15,17] Self-reported income may be a sensitive topic, but there are reliable methods to collect information on income accurately.[21]

While both annual and lifetime income can be estimated, the lifetime estimate is probably more meaningful in evaluating the elderly population since many of them no longer earn income from jobs.

The MCBS includes annual income information for a subset of beneficiaries included in the MCBS who selected for the income and assets sample. The income variable is a continuous variable, estimating total household income of beneficiaries.

6. Wealth

In this study, total assets and home ownership are used to represent wealth. Like income, wealth can be a means to acquire health care and thereby can be associated with health outcomes.[17,22] However, wealth may capture more variation of accumulated economic resources among the elderly than income, particularly for retirees. Therefore, wealth may be a better indicator of socioeconomic position for

Medicare beneficiaries than income.[23] Further, there is variation in wealth by race and gender even among groups with similar income. Blacks, for example, tend to have less wealth than Whites who have similar incomes.[24,25]

Total assets are defined as the sum of home value and non-home assets, subtracting any debt. The MCBS contains a few variables that were used in this study to construct this total assets measure. First, home value was calculated as the difference between present value of beneficiary's (or spouse's) home and any home-related debt. Second, non-home assets were the difference between assets and assets-related debt and other debts. Third, the two constructed variables, home value and non-home assets, were added to get total assets.

The MCBS includes a question about home ownership. The response can be one of these options: beneficiary owns a home, rents, doesn't own or rent, both owns and rents, has subsidized rental housing, or is homeless/in jail (the few beneficiaries who responded they didn't know or refused to answer were excluded). This study used a binary variable (own, does not own) for home ownership.

7. Private Health Insurance Coverage

Health insurance coverage is often used in the literature as a proxy for income.[16] In the MCBS population, Medicaid coverage (described in the claims-based variables section below) indicates lower income, while private health insurance (in addition to Medicare coverage) indicates higher income. While having additional private insurance in the Medicare population is not often studied, the role of having any insurance and the type of primary insurance on health outcomes has been evaluated: in the general population, patients covered by Medicaid have significantly higher odds of readmission than patients covered by private insurance.[26,27]

The MCBS includes a variable indicating having private health insurance in addition to Medicare coverage. Responses include no entitlement, employer-sponsored insurance (ESI), self-purchased, and both ESI and self-purchased. In this study, the variable indicating private health insurance coverage was binary (beneficiary is covered, not covered).

B. Area-Level Social Risk Factor (Social Deprivation Index) Included in the Analyses

The social deprivation index was included in the analyses to account for area-level social risk differences. Similar to previous research, the index used in this study included poverty, single parent household, less than 12 years of schooling, not owning a car, not owning a home, non-employment, over-crowding, percent Black, and high-need age group at the census tract, primary care service area, and county levels.[28]

C. Claims-Based Variables Included in the Analyses

Similar to Study A, the claims-based variables included in these analyses were dual enrollment in Medicare and Medicaid, race and ethnicity, and rurality.

1. Dual Enrollment

Medicare data capture Medicaid enrollment with a variable labeled “state reported dual eligible status code.” This code, captured monthly, indicates which individual category of dual eligibility applies to the beneficiary.

Using dual enrollment as an income proxy has several limitations. One is its variability by state, though, this is much less of an issue for the over-65 and persons with disabilities that constitute the dually enrolled population in Medicare because 40 states and the District of Columbia use the federal Supplemental Security Income (SSI) definition, which is uniform across states. While SSI sets an income standard for eligibility at roughly 75% of the Federal Poverty Level (FPL), about one-third of states set their eligibility levels at 100% FPL or higher.[a] In another ten states, known as 209(b) states, eligibility rules for dually eligible populations can be set lower than the SSI standards.[b] A second important limitation is that dual enrollment only captures individuals who are actually enrolled in Medicaid and misses low-income beneficiaries who have not applied for Medicaid, including those unaware they are eligible. Medicaid enrollment also fails to identify the “near-poor” who may face challenges similar to those of Medicaid recipients but who lack the additional support that Medicaid provides. Finally, dual enrollment is a binary variable, and rather than offering information about the actual income or assets of individuals, only indicates that they fall below Medicaid eligibility thresholds.

2. Race and Ethnicity

Two variables designating the race and ethnicity of Medicare beneficiaries are available in Medicare’s primary administrative dataset, the Master Beneficiary Summary File (MBSF). The Medicare program obtains these variables indirectly rather than obtaining them from beneficiaries. The first race variable, the Beneficiary Race Code, is obtained from the Social Security Administration, which transfers demographic data on applications for Social Security Numbers (SSNs) to the MBSF.

The second variable is derived using the RTI Race Code, the algorithm developed by the Research Triangle Institute (RTI) as described in Chapter 2. This code improves substantially upon the Beneficiary Race Code in identifying Hispanic and Asian and Pacific Islander beneficiaries while and maintaining similar performance in identifying White and Black beneficiaries. Currently, there is no alternative variable in existing Medicare data that: 1) better identifies American Indian and Alaska Native beneficiaries, 2) separates Asian and Pacific Islander populations, and/or 3) allows beneficiaries to be identified with more than one race or a race and an ethnicity. Given the absence of such a variable, which would improve upon the weaknesses of both the Beneficiary Race Code and the RTI Race Code, the analyses in this Report used the RTI Race Code as the data source for race and ethnicity.

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[a] SSI uses the Federal Benefit Rate (FBR), while Medicaid uses the Federal Poverty Level; the current FBR to qualify for SSI is roughly 75% of the FPL.

[b] SSI was created by the 1972 Social Security Amendments and became effective in 1974. Section 209(b) of that Act allowed states to apply 1972 eligibility criteria to aged or disabled individuals receiving SSI benefits for purposes of determining Medicaid eligibility.(https://www.govtrack.us/congress/bills/92/hr1/text).

3. Rurality

Rurality is an important community variable that can serve as a proxy for individual social risk, as well as quantify local resources, stressors, and supports. Many Medicare payments, including those made for acute, post-acute, dialysis, and ambulance services, are adjusted in some way for rurality, which, for the purposes of Medicare payments, is commonly assigned using a beneficiary or provider's geographic location (address).

For most Medicare classifications that identify rural areas, CMS uses a concept developed by the Office of Management and Budget (OMB), Core-Based Statistical Areas (CBSAs).[29] CBSAs are county-based areas consisting of an urban core and adjacent areas that are economically tied to that core by commuting. They have three major classifications: Metropolitan Statistical Area (MSA), Micropolitan Statistical Area (mSA), or Neither. An MSA contains an urban core population of 50,000 or more, while an mSA contains an urban core population of at least 10,000 but less than 50,000.

As explained in Chapter 2, for most Medicare payment purposes areas without a core population of at least 10,000 (including most counties classified as "Micropolitan" or "Neither") are considered rural. Under these definitions, there are 381 MSA and 536 mSAs currently in the U.S.; about 15% of the overall U.S. population and 72% of the land area of the country is in rural counties.[30]

As also noted in Chapter 2, a county-based method like the CBSA may obscure important differences within counties, particularly large ones that include many diverse areas and/or include both rural and urban areas.[31] That limitation has led to the development of other definitions of rurality. The Federal Office of Rural Health Policy (FORHP) in the Health Resources and Services Administration (HRSA), for example, has developed an additional method that is commonly used when studying Medicare beneficiaries and providers. This method begins by defining all non-MSA counties as rural, but then applies additional parameters to reclassify rural areas within Metropolitan counties based on Rural-Urban Commuting Area (RUCA) codes developed by the U.S. Department of Agriculture (USDA).[30] While this method allows for more granular identification of rural providers and beneficiaries, however, it is not currently used by CMS for most payment purposes, with the exception of Critical Access Hospital determination and telehealth billing. RUCA codes are used determining rurality in MIPS. Because CMS follows OMB guidance to adjust payments to individual providers, clinics, and hospitals, the CBSA methodology remains the most applicable for the analyses conducted for this Report.

IV. Functional Risk Factors

The analyses in this Report included survey-based questions from the MCBS that capture functional risk in the following areas: activities of daily living (ADL), instrumental activities of daily living (IADLs), and general health status. These areas are described in depth in Chapter 5.

Some models used in the analyses below also included the frailty index to assess the effect of Medicare claims-based frailty alone. In these analyses, the frailty index was dichotomized into a variable for those beneficiaries having two or more frailty indicators (as opposed to those with zero or one). This categorization was based on previously published studies using the frailty index.[32] For more detail on the frailty-related diagnoses, see Chapter 5.

V. Prevalence of Social Risk Factors

Including all MCBS respondents with no missing data from 2010-2013, the sample consists of 20,461 beneficiaries, approximately 21% of whom were dually enrolled in Medicare and Medicaid (Table 8.1). The sample contained 53% unmarried beneficiaries, 24% with less than a high school diploma, 19% with a bachelor's degree or more education, and 5% who had their interview in a language other than English (or needed a proxy because of a language barrier). Over half reported having private insurance coverage along with Medicare coverage, and 30% reported living alone. Approximately 33% reported that they did not own a home, and the median annual household income was $27,000 with median total assets valued at $127,000.

Dually enrolled Medicare beneficiaries were more likely than other beneficiaries to have social risk factors (Table 8.1). For example, they were more likely to be unmarried (82% vs. 45%), have a language barrier (10% vs. 4%), live alone (34% vs. 28%), and not own a home (75% vs. 22%). They were also less likely to be educated than non-dually enrolled beneficiaries (46% vs. 19% with less than a high school diploma, and 5% vs. 23% with a bachelor's degree or more, respectively). In addition, dually enrolled beneficiaries were less likely to have private health insurance than other beneficiaries (11% vs. 65%) and their median annual household income was lower than that of other Medicare beneficiaries ($11,000 vs. $42,000). In addition, dually enrolled beneficiaries had extremely low median total assets compared to other beneficiaries ($100 vs. $159,000).

Table 8.1. Prevalence of Social Risk Factors by Dual-Enrollment Status in the MCBS Sample

Social Risk Factor	All Beneficiaries	Dually Enrolled	Not Dually Enrolled
N	20,461	4,165	16,296
Not Married (%)	53	82	45
Education (%)			
Less than High School	24	46	19
High School	30	30	30
Less than Bachelor's Degree	27	20	29
Bachelor's Degree or More	19	5	23
Non-English Speaker (%)	5	10	4
Living Alone (%)	30	34	28
Private Insurance (%)	54	11	65
Do Not Own Home (%)	33	75	22
Median Income ($)	$27,000	11,000	32,000
Median Total Assets ($)	$127,000	100	159,000

Note: Respondents missing values of social or medical risk factors are excluded. MCBS=Medicare Current Beneficiary Survey.

Findings: Dually enrolled beneficiaries are more likely to have additional social risk factors than other Medicare beneficiaries.

VI. Prevalence of Functional Risk Factors

The probabilities of having functional risk factors were higher among dually enrolled beneficiaries than other Medicare beneficiaries. Table 8.2 shows the distribution of functional risk factors from the MCBS respondents. Dually enrolled beneficiaries had a higher prevalence of difficulty with each ADL and IADL than non-dually enrolled beneficiaries. In several cases, they had over twice as high a prevalence of difficulty with a given ADL, including difficulty with bathing, dressing, eating, and toileting. The proportion of beneficiaries who reported being in excellent or very good health compared with their peers followed a similar pattern to the ADLs and IADLs, with 24.4% of dually enrolled beneficiaries reporting excellent or very good health compared with 47.7% of non-dually enrolled beneficiaries. A near inverse proportion reported being in fair or poor health (46.4% of dually enrolled vs. 22.1% of non-dually enrolled).

Table 8.2. Prevalence of Functional Risk Factors in the MCBS by Dual-Enrollment Status

Functional Risk Factor	All Beneficiaries	Dually Enrolled	Not Dually Enrolled
N	20,461	4,165	16,296
ADL (activities of daily living) Difficulties			
Bathing/Showering	14.2%	23.9%	11.8%
Dressing	10.5%	17.5%	8.7%
Eating	3.8%	6.9%	3.0%
Getting In/Out of Bed/Chair	16.6%	23.9%	14.7%
Walking	31.7%	42.4%	29.0%
Toileting	7.2%	12.2%	5.9%
IADL (instrumental activities of daily living) Difficulties			
Using a Telephone	9.0%	13.0%	8.0%
Light Housework	15.7%	27.7%	12.6%
Heavy Housework	39.1%	54.2%	35.3%
Preparing Meals	14.1%	26.3%	10.9%
Shopping for Groceries	18.9%	31.9%	15.6%
Managing Money	12.5%	25.0%	9.3%
General Health (compared to others the same age)			
Excellent or Very Good	42.9%	24.4%	47.7%
Good	30.1%	29.2%	30.3%
Fair or Poor	27.0%	46.4%	22.1%

Note: This table excludes beneficiaries with missing values for any social or functional risk factor. MCBS=Medicare Current Beneficiary Survey.

The counts of difficulties with ADLs, IADLs, and frailty-related diagnoses showed a similar pattern, with a greater proportion of dually enrolled beneficiaries having frailty-related diagnoses and difficulty with one or more ADLs and IADLs than other beneficiaries (Table 8.3). The difference between dually enrolled and other beneficiaries was especially pronounced at the high end of the total counts for each functional risk factor as well (i.e., four or more ADL or IADL difficulties). Dually enrolled beneficiaries tended to have more frailty-related diagnoses than other beneficiaries as well, but this difference was not as pronounced as the ADL and IADL differences.

Table 8.3. Count of Functional Risk Factors by Dual-Enrollment Status in the MCBS

Functional Risk Factor	All Beneficiaries	Dually Enrolled	Not Dually Enrolled
Total Beneficiaries	20,461	4,165	16,296
ADL Difficulties			
0	63.5%	51.0%	66.7%
1	15.8%	17.6%	15.3%
2	8.3%	10.5%	7.7%
3	4.3%	6.8%	3.7%
4	3.4%	6.1%	2.7%
5	3.0%	4.8%	2.5%
6	1.7%	3.3%	1.3%
IADL Difficulties			
0	54.7%	35.4%	59.6%
1	20.2%	22.3%	19.7%
2	8.2%	11.9%	7.3%
3	5.0%	8.1%	4.2%
4	5.2%	10.0%	3.9%
5	3.4%	6.2%	2.7%
6	3.3%	6.1%	2.6%
Frailty-Related Diagnoses*			
0	83.5%	79.3%	84.5%
1	9.0%	10.2%	8.7%
2	3.6%	4.9%	3.2%
3	1.9%	2.8%	1.7%
4	1.0%	1.5%	0.9%
5	0.6%	0.7%	0.6%
6	0.3%	0.3%	0.3%
7	0.1%	0.2%	0.1%
8+	0.0%	0.0%	0.0%

*Based on beneficiaries' Medicare claims for the last year that they were in the survey during 2010-2013

Note: This table excludes beneficiaries with missing values for any social or functional risk factor. ADL=activities of daily living; IADL=instrumental activities of daily living; MCBS=Medicare Current Beneficiary Survey.

Findings: Dually enrolled beneficiaries are more likely to have functional risk factors than other Medicare beneficiaries.

VII. Association between Risk Factors and Outcomes Evaluated

A. Total per Capita Costs (TPCC)

1. Association between Social Risk Factors and TPCC

The TPCC measure captures annual risk-adjusted, price-standardized Medicare Parts A and B spending for attributed beneficiaries. In this analysis, almost every individual social risk factor (from both claims and survey data) was statistically significantly associated with greater costs in the raw model (without risk adjustment). When risk adjustment was applied using end-stage renal disease (ESRD) status, hierarchical condition category (HCC) risk score, and risk score squared, however, the associations become weaker (see appendix tables).

Table 8.4 summarizes the dually enrolled beneficiary effect in different models: raw, risk-adjusted, controlling for claims-based social risk factors, controlling for both claims-based and MCBS social risk factors, and adding the social deprivation index to the model. The full results of this table are presented in the appendix to this chapter.

Dually enrolled beneficiaries had higher TPCC than non-dually enrolled beneficiaries in all models. These findings are consistent with findings from Study A, which found that dually enrolled beneficiaries had higher costs than average, even after risk adjustment. In this study, dually enrolled beneficiaries spent $6,700 more in the raw model and $2,200 more in the risk-adjusted model.

Adding each social risk factor in the MCBS separately to the model that included dual enrollment in the risk adjustment increased the TPCC for dually enrolled beneficiaries compared with non-dually enrolled beneficiaries in both magnitude and significance (see appendix). For example, controlling for marital status increased the difference in TPCC for dually enrolled beneficiaries compared with non-dually enrolled beneficiaries from $2,200 (p=0.01) to $2,300 (p=0.02) in the risk-adjusted models. When claims-based social risk factors (race/ethnicity and rurality) were added to the model, dually enrolled beneficiaries spent $2,500 more than other beneficiaries. The risk adjustment and claims-based social risk factors accounted for 25% of the differences in cost between patients (R-squared= 0.25).

Additional controls using the MCBS social risk factors (marital status, education, English language proficiency, living alone, private insurance coverage, owning a home, income, and total assets) resulted in $3,700 higher TPCC for dually enrolled beneficiaries than non-dually enrolled beneficiaries. Controlling for social risk factors and social deprivation index in these models decreased the coefficient to $3,100. Adding additional social risk adjustment did not improve the model performance much, as the R-squared only increased to 0.27. Thus, in addition to confirming that disparities in spending by social risk persist after account for the measure risk adjustment (as Study A showed), these findings confirm that dual enrollment is the strongest social risk factor.

Table 8.4. Association between Dual Enrollment and TPCC

Model	Dually Enrolled Beneficiary Effect	Model R^2
Raw Difference	**$6,700**	
Measure Risk Adjustment (RA) Only	**$2,200**	0.25
RA + Claims-Based Social Risk Factors	**$2,500**	0.25
RA + Claims-Based + MCBS Social Risk Factors	**$3,700**	0.26
RA + Claims-Based + MCBS Social Risk Factors + SDI	**$3,100**	0.27

Notes: Claims-based social risk factors include rurality (living outside a metropolitan statistical area (MSA)), race/ethnicity (Black, Hispanic, White, other); MCBS social risk factors include: marital status, education, language, living alone, private health insurance, home ownership, income, and total assets. All dually enrolled beneficiary effects are statistically significant at $p<0.05$. MCBS=Medicare Current Beneficiary Survey; SDI=social deprivation index.

2. Association between Functional Risk Factors and TPCC

The appendix to this chapter includes the results of a multivariable regression model examining the association between the 2013 TPCC measure and functional risk factors (ADL difficulties, IADL difficulties, and frailty-related diagnoses) (R^2=0.26). Each of the functional risk factors was associated with increased spending, and all coefficients were statistically significant. Beneficiaries having two or more frailty indicators had an average of $2,857 ($p<0.001$) greater spending than those who had one or fewer indicators. Compared to beneficiaries who did not report difficulty with any ADLs, beneficiaries with one ADL limitation had $2,059 ($p=0.011$) increased spending, and beneficiaries with two or more ADL limitations had $4,424 ($p<0.001$) greater spending than counterparts with no ADL limitations. Beneficiaries who reported having difficulty with one or more IADLs had $1,019 ($p=0.018$) greater spending than beneficiaries who did not report having difficulty with any of the six IADLs.

The appendix also includes results from using additional models to examine various combinations of medical risk factors—including ADLs, IADLs, the frailty indicators, and general health status—and their association with TPCC. These models showed similar associations between medical risk factors and the TPCC.

Findings: Similar to the findings from claims-based functional risk factors, survey-based functional risk factors (ADLs, IADLs, and general health status) are associated with increased spending.

3. Association between Functional Risk Factors, Claims-Based Social Risk Factors, and TPCC

To examine the effect of adding survey- and claims-based functional risk factors on Study A's previously observed effect of dual-enrollment status, multivariable regressions including various combinations of these functional risk factors (ADLs, IADLs, the frailty-related diagnoses, and general health status) were estimated. The claims-based social risk factor included in the following set of tables was whether or not a beneficiary was dually enrolled.

Table 8.5 displays multivariable regressions modelling the differences in annual spending between dually enrolled and other beneficiaries' when including various functional risk factors. Without adjustment, dually enrolled beneficiaries cost an average of $6,700 more than other beneficiaries. Including the measure risk adjustment reduced the effect of dual enrollment to $2,200. When ADL and/or IADL limitations were added to the models, dually enrolled and other beneficiaries had slightly lower annual costs than in models lacking these functional risk factors; these differences were not statistically significant ($1,184-$1,542). Adding the frailty-related diagnoses to the risk adjustment model, however, made dually enrolled beneficiaries statistically significantly more expensive ($2,175). The difference in cost between dually enrolled and non-dually enrolled beneficiaries was smaller when including the frailty-related diagnoses together with the ADLs and IADLs ($1,209), though this was not a statistically significant result. The amount of variation explained in all models was almost the same at 25% or 26%. Including all the functional risk factors (ADLs, IADLs, the frailty-related diagnoses, and general health status) resulted in dually enrolled beneficiaries having similar costs to other beneficiaries ($720), though this was not statistically significant. Full regression results from the various models can be found in the appendix to this chapter.

Table 8.5. Association between Functional Risk Factors, Claims-Based Social Risk Factors, and TPCC

Model	Dually Enrolled Beneficiary Effect on TPCC	Model R^2
Raw Difference	**$6,700**	
Measure Risk Adjustment (RA) Only	**$2,200**	0.25
RA + ADLs	$1,319	0.26
RA + IADLs	$1,542	0.26
RA + ADLs + IADLs	$1,184	0.26
RA + Frailty-Related Diagnoses	**$2,175**	0.25
RA + ADLs + IADLs + Frailty-Related Diagnoses	$1,209	0.26
RA + ADLs + IADLs + General Health + Frailty-Related Diagnoses	$729	0.26

Notes: Bolded values are statistically significant at the $p<0.05$ level. Frailty-related diagnoses are 12 claims-based indicators of frailty. ADL=activities of daily living; IADL=instrumental activities of daily living; TPCC=total per capita cost.

Findings: These findings are consistent with the claims-based functional risk factors evaluated in earlier chapters of this Report, suggesting that some of the disparities in TPCC observed between dually enrolled and other beneficiaries are actually due, at least in part, to unmeasured medical risk.

4. Association between Functional Risk Factors, Social Risk Factors, and TPCC

Another set of regressions examined various combinations of survey-based social risk factors, as well as functional risk factors, to examine their effect on the dual-enrollment status effect on quality and resource use measures found in Study A. These analyses included various combinations of survey-based social risks (race, rurality, marital status, education, language, household composition, private insurance coverage, home ownership, income, total assets, and social deprivation index (SDI) as well as functional risk factors (ADLs, IADLs, the frailty-related diagnoses, and the general health status measure). The functional risk indicators from claims were defined as having 1) two or more functional dependence indicators, 2) two or more mental, behavioral and neurodevelopmental disorders indicators, and/or 3) two or more potentially disabling condition indicators, as described in the functional risk chapter.

Table 8.6 displays multivariable regressions modelling the effect of social and functional risk factors on dually enrolled beneficiaries' TPCC. Including the MCBS social risk factors along with the functional risk factors increased the size of the dual-enrollment effect to $3,000. On the other hand, including only functional risk factors reduced the dual-enrollment effect to $720, a non-statistically significant change. The MCBS sample size was small, and controlling for both functional and social risk factors made it even smaller as the reference group for dually enrolled beneficiaries consisted of other beneficiaries who lacked any social or functional risk factors.

Full regression results from the models can be found in the appendix to this chapter, along with additional models controlling for claims-based functional risk factors (defined as frailty-related diagnoses; functional dependence; mental, behavioral and neurodevelopmental disorders; and potentially disabling conditions) instead of frailty-related diagnoses alone. Findings resembled those presented in this section.

Table 8.6. Association between Functional Risk Factors, Social Risk Factors, and TPCC

Model	Dually Enrolled Beneficiary Effect on TPCC	Model R^2
Raw Difference	**$6,700**	
Measure Risk Adjustment (RA) Only	**$2,200**	0.25
RA + ADLs + IADLs + General Health + Frailty-Related Diagnoses	$720	0.26
RA + ADLs + IADLs + General Health + Frailty-Related Diagnoses + MCBS Social Risk Factors	**$3,000**	0.28

Notes: Bolded values are statistically significant at the $p<0.05$ level. Frailty-related diagnoses are 12 claims-based indicators of frailty. Claims-based social risk factors are rurality (living outside a metropolitan statistical area (MSA)), and race/ethnicity (Black, Hispanic, White, other); MCBS social risk factors are marital status, education, language, living alone, private health insurance, home ownership, income, and total assets. ADL=activities of daily living; IADL=instrumental activities of daily living; MCBS=Medicare Current Beneficiary Survey; TPCC=total per capital cost.

Findings: Including the MCBS social risk factors along with functional risk factors increased the size of the dual-enrollment effect but that including only functional risk factors reduced it, though this latter result was not statistically significant.

B. All-Cause Hospital Readmissions

This section presents findings from analyses conducted using the surgical cohort of the all-cause hospital readmissions measure. Findings from the medical cohort of this measure are presented in the appendix to this chapter because the sample size was very small, making the findings unstable and harder to interpret.

1. Association between Social Risk Factors and All-Cause Hospital Readmissions

Several social risk factors were statistically significantly associated with higher odds of all-cause hospital readmissions in the raw models, but the associations were no longer statistically significant in the risk-adjusted models. For example, dual enrollment was statistically significantly associated with higher odds of readmission in the raw model (odds ratio of 1.89; p=0.002) but not in the risk-adjusted model (OR=1.43). This finding differs slightly from Study A, which included all-cause hospital readmissions as part of the Value Modifier (VM) program and found that dually enrolled beneficiaries had higher readmission and ambulatory care-sensitive condition (ACSC) admission rates, even after adjustment for medical comorbidities and even within the same practice. In the current study, being not married and having low income were statistically significantly associated with higher odds of readmission in both the raw and risk-adjusted models.

Table 8.7 summarizes the associations between dual enrollment and all-cause hospital readmissions in the raw model, risk-adjusted model with dual enrollment as the only additional variable, a model including other claims-based social risk factors, a model including social risk factors from both claims and the MCBS, and a model including social risk factors from both sources and controlling for social deprivation index (full models are presented in the appendix). The appendix to this chapter presents information on the association between each social risk factor and the surgical cohort of the all-cause hospital readmissions measure.

While dual enrollment was associated with higher odds of readmission in all the models, the association was statistically significant only in the raw model, where dually enrolled beneficiaries had 89% greater odds of readmission than non-dually enrolled beneficiaries. The risk-adjusted models correctly predicted readmission for 65-70% of beneficiaries, as indicated by a c-statistic of 0.62-0.68 across cohorts.

Table 8.7. Association between Dual Enrollment and All-Cause Hospital Readmissions in the Surgical Cohort

Model	Dually Enrolled Beneficiary Effect	Model C-Statistic
Raw Difference	**1.89**	
Measure Risk Adjustment (RA) Only	1.43	0.65
RA + Claims-Based Social Risk Factors	1.39	0.65
RA + Claims-Based + MCBS Social Risk Factors	1.78	0.70
RA + Claims-Based + MCBS Social Risk Factors + SDI	1.73	0.70

Notes: Bolded values are statistically significant at the p<0.05 level. Social risk factors include: rurality (living outside a metropolitan statistical area (MSA)), race/ethnicity (Black, Hispanic, White, other), marital status, education, language, living alone, private health insurance, home ownership, income, and total assets. MCBS=Medicare Current Beneficiary Survey; SDI=social deprivation index.

Findings: These findings suggest that dual enrollment and the other social risk factors are accounting for similar qualities and that adding additional social risk factors does not change the effect of dual enrollment.

2. Association between Functional Risk Factors and All-Cause Hospital Readmissions

The appendix to this chapter shows results of a logistic regression model used to examine the relationship between all-cause hospital readmissions in the surgical cohort with the following functional risk factors in beneficiaries: 1) ADL limitations, 2) IADL limitations, and 3) claims-based frailty diagnoses. Having two or more claims-based frailty diagnoses (as opposed to none) (OR=1.26, p=0.308), two or more ADLs (as opposed to none) (OR=1.10, p=0.443), and one or more IADLs (as opposed to none) (OR=1.36, p=0.062) were all associated with a greater likelihood of a readmission. None of these associations was statistically significant.

The appendix to this chapter also includes results from additional models that examined how various combinations of functional risk factors including ADLs, IADLs, claims-based frailty diagnoses, and general health status were associated with the surgical cohort. These models show similar associations between functional risk factors and the likelihood of readmission among the surgical cohort.

3. Association between Functional Risk Factors, Claims-Based Social Risk Factors, and All-Cause Hospital Readmissions

Multivariable regressions including various combinations of functional risk factors (ADLs, IADLs, the frailty-related diagnoses, and general health status) were used to estimate the effect of survey-based and additional claims-based functional risk factors on Study A's observed effect of dual-enrollment status. The claims-based social risk factor included was dual enrollment.

Table 8.8 displays logistic regressions modelling the difference between dually enrolled and non-dually enrolled beneficiaries in the likelihood of readmission within 30 days, as defined by the measure among the surgical cohort when including various functional risk factors. Dual enrollment was associated with higher odds of readmission in all the models; however, it was only statistically significant in the raw model, where dually enrolled beneficiaries had 89% greater odds of readmission than non-dually enrolled beneficiaries. The risk-adjusted models correctly predicted readmission for 65-66% of beneficiaries, as indicated by a c-statistic of 0.65-0.66 across cohorts.

Table 8.8. Association between Functional Risk Factors, Claims-Based Social Risk Factors, and All-Cause Hospital Readmissions in the Surgical Cohort

Model	Dually Enrolled Beneficiary Effect	Model C-Statistic
Raw Difference	**1.89**	
Measure Risk Adjustment (RA) Only	1.43	0.65
RA + MCBS ADLs	1.37	0.65
RA + MCBS IADLs	1.34	0.65
RA + MCBS ADLs + IADLs	1.33	0.66
RA + Frailty-Related Diagnoses	1.42	0.65
RA + MCBS ADLs + IADLs + Frailty-Related Diagnoses	1.33	0.65
RA + MCBS ADLs + IADLs + General Health + Frailty-Related Diagnoses	1.26	0.66

Notes: Bolded values are statistically significant at the p<0.05 level. Frailty-related diagnoses are 12 claims-based indicators of frailty. ADL=activities of daily living; IADL=instrumental activities of daily living; MCBS=Medicare Current Beneficiary Survey.

Findings: These findings are consistent with the claims-based functional risk factors evaluated in earlier chapters of this Report, suggesting that some of the disparities in readmission rates observed between dually enrolled and other beneficiaries are actually due to unmeasured medical risk.

4. Association between Functional Risk Factors, Social Risk Factors, and All-Cause Hospital Readmissions

Table 8.9 shows the results of logistic regressions modelling the effect on dually enrolled beneficiaries' likelihood of hospital readmissions within the surgical cohort when including both social and functional risk factors. Including the MCBS social risk factors along with the functional risk factors increased the odds of readmission for dually enrolled beneficiaries (1.26 for only functional risk factors; 1.53 when including social risk factors and functional risk factors). However, being dually enrolled was not statistically significant in any of these models. It is possible that these results are not significant due to the small sample size of the surgical cohort, particularly because, while not significant, the odds ratios for dually enrolled beneficiaries being readmitted were still fairly large. Overall, these findings indicate that, similar to the models for the TPCC measure shown in Table 8.6, accounting for functional risk may eliminate some of the differences observed in readmission rates between dually enrolled and non-dually enrolled beneficiaries.

This chapter's appendix includes full regression results from these models, together with additional models controlling for claims-based functional risk factors (defined as frailty-related diagnoses; functional dependence; mental, behavioral and neurodevelopmental disorders; and potentially disabling conditions) instead of frailty-related diagnosis alone. Findings from all these models resembled findings presented in this section.

Table 8.9. Association between MCBS Social Risk Factors, Functional Risk Factors, and All-Cause Hospital Readmissions in the Surgical Cohort

Model	Dually Enrolled Beneficiary Effect	Model C-Statistic
Raw Difference	**1.89**	
Measure Risk Adjustment (RA) Only	1.43	0.65
RA + ADLs + IADLs + General Health + Frailty-Related Diagnoses	1.26	0.68
RA + ADLs + IADLs + General Health + Frailty-Related Diagnoses + MCBS Social Risk Factors	1.53	0.70

Notes: Bolded values are statistically significant at the p<0.05 level. Frailty-related diagnoses are 12 claims-based indicators of frailty; Claims-based social risk factors are rurality (living outside a metropolitan statistical area (MSA)), and race/ethnicity (Black, Hispanic, White, other), MCBS social risk factors are marital status, education, language, living alone, private health insurance, home ownership, income, and total assets. ADL=activities of daily living; IADL=instrumental activities of daily living; MCBS=Medicare Current Beneficiary Survey.

Findings: Accounting for functional risk may eliminate some of the differences observed in readmission rates between dually enrolled and non-dually enrolled beneficiaries. It should be noted that, even though not significant, these odds ratios for dually enrolled beneficiaries being readmitted are fairly large.

VIII. Key Findings

1. Dually enrolled beneficiaries have a higher prevalence of social and medical risk factors.

Consistent with the findings from Study A, this Report found that dually enrolled beneficiaries faced more social and medical risks than other beneficiaries. In terms of social risk, they had fewer social relationships in terms of living alone and/or not being married. They had lower levels of education and were more likely to be non-English speakers. They had lower income, fewer assets, were less likely to own a home, and were less likely to have private insurance.

Dually enrolled beneficiaries were also more likely to have functional limitations. They had a higher prevalence of difficulties with each activity of daily living (ADL) and instrumental activity of daily living (IADL) than non-dually enrolled beneficiaries. In several cases, they had over twice as high a prevalence of a given ADL than non-dually enrolled beneficiaries, including reporting difficultly with bathing, dressing, eating, and toileting. Looking at general health, dually enrolled beneficiaries were more than twice as likely to report being in fair or poor health than were non-dually enrolled beneficiaries.

2. All social and functional risk factors are independently associated with higher spending and hospital readmissions.

All the social risk factors evaluated (dual enrollment, marital status, education, language, social relationships, private insurance coverage, home ownership, income, and assets) were statistically significantly associated with higher spending and higher hospital readmission rates. However, many of these associations were no longer statistically significant after including the measure risk adjustment, indicating that this risk adjustment accounts for some of the differences in social risk.

For both the TPCC measure and the hospital readmission measure, each of the functional risk factors, when included, were associated with poor outcomes. In particular, difficulty with two or more ADLs was associated with the greatest additional costs, suggesting underlying differences in functional risk among Medicare beneficiaries that affect outcomes and that may not be captured by current risk adjustment methodologies.

3. **Of all available social risk factors, dual enrollment and social relationships are the strongest predictors of poor outcomes.**

As with Study A, this study found dual enrollment to be the strongest predictor of poor outcomes, in this case higher readmission rates. For beneficiaries, the relationship between dual enrollment and higher spending was statistically significant after accounting for the measures' risk adjustment, additional functional risk factors, and additional social risk factors. Dual-enrollment status in risk adjustment accounted for much of the variation in outcomes due to social risk, suggesting that adding any of the additional measures of social risk evaluated in this Report would not substantially improve the measure risk adjustment beyond what is already achieved by including dual-enrollment status.

The two proxies for social relationships, not being married and living alone, were also statistically significant in the full model for total spending, although this relationship was not as consistent or significant as the relationship with dual enrollment. Beneficiaries who lived alone were more likely to have higher TPCC than other beneficiaries, controlling for other social risk factors. Unmarried beneficiaries had lower costs in the model including dual enrollment and measure risk adjustment, but this effect was not significant in the full model including all social risk factors. This finding could be due to a stronger association between social relationships and the quality and resource use measures evaluated than other MCBS social risk factors. It is also possible that the other MCBS social risk factors (such as income and assets) are more closely associated with dual enrollment status than social relationships and as such are not significant predictors when dual enrollment status is included in the model.

4. **Of all available functional risk factors, limitations in activities of daily living (ADLs) and instrumental activities of daily living (IADLs) and claims-based functional risk factors are strong predictors of higher spending.**

In addition to dual enrollment, additional functional risk factors were strongly associated with higher spending and higher readmission rates. All three functional status risk factors evaluated using the MCBS (limitations in ADLs, limitations in IADLs, and frailty indicators), were associated with these poor outcomes, even after including the measures' risk adjustment and the social risk factors available in the MCBS. It was not possible to evaluate the three functional risk factors using Medicare claims data because these data include only indicators of functional status, but not information about ADLs or IADLs. However, in line with the findings in the claims-based functional risk chapter (Chapter 7), these findings indicate that additional adjustment for functional risk using available data would improve measure risk adjustment. They also shows that some of the differences observed between dually enrolled beneficiaries and other beneficiaries are due to differences in functional risk.

5. **The small sample size of the MCBS makes drawing conclusions about these relationships more difficult, particularly for measures that focus on a subpopulation using specific health services.**

The small sample size of the MCBS limited the quality and resource use measures that could be evaluated for this study. The study included the TPCC measure, which includes all beneficiaries receiving evaluation and management (E&M) services. It also included two of the five cohorts (surgical and medical) that make up the all-condition readmission measure. The other three cohorts in this measure (cardiovascular, cardiorespiratory, and neurology) did not comprise enough beneficiaries in the MCBS sample to be evaluated meaningfully. Measures for services that few beneficiaries receive, such as post-acute care or dialysis, could not be evaluated with the MCBS sample for the same reason. Moreover, the small number of beneficiaries in the MCBS meant that there were not enough beneficiaries seeing any given provider to estimate provider performance, even on the measures evaluated at the beneficiary level.

This small sample size and limited measures evaluated mean that the findings in this Report, although consistent across the MCBS sample, may not be representative of the larger Medicare population. Additional analyses using a larger sample and additional quality and resource use measures could supplement these findings. This Report consequently intended to use responses to the American Community Survey (ACS), which includes a much larger sample of Medicare beneficiaries, to assess additional quality and resource-use measures and to evaluate provider performance. However, at the time of submission, the merged Medicare-ACS data were not yet available. When these data become available, an addendum to this Report will be published.

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Chapter 9. Survey-Based Functional and Social Risk Factors and Performance in Medicare Quality and Resource Use Measures Using the American Community Survey (ACS)

The U.S. Census Bureau conducts the American Community Survey (ACS) continuously, collecting data on population and housing characteristics.[1] In 2014, the ACS, the federal government's largest survey, sampled 3.3 million households.[1,2] The survey began in 2000 and transitioned to full implementation in 2005.[2] It includes monthly samples to generate annual estimates for census tracts and block groups (the smallest geographic unit for which the Census publishes data).[1] The U.S. Census Bureau also releases annual and three-year estimates for larger geographies.[1] Households selected in the sample are required by law to participate.[3]

This Report intended to use Medicare beneficiaries' individual-level responses to the ACS and Medicare claims to evaluate the effect of the social risk factors available in the ACS on the quality and resource use measures included in Medicare's value-based purchasing (VBP) programs. However, at the time of submission, the merged Medicare-ACS data were not yet available. When these data become available, an addendum to this Report will be published.

I. Importance of the ACS

The ACS is a nationally representative survey with a very large sample size. The survey offers small-area data at the census-tract and block-group levels. Data are collected on various social risk factors, including employment, nativity, private insurance coverage, marital status, and home ownership. Since some of these social risk factors are not found in Medicare claims data, ACS data are being linked to Medicare claims for this study. For some of the social risk factors studied here, such as language, nativity, and education, the ACS is the only source of statistics at the local level.[4]

II. Limitations of the American Community Survey

Although the ACS offers statistics for geographies as small as census tracts and block groups, these are only five-year aggregate estimates due to small sample sizes for a single year. Additionally, individuals' census geographies are often unknown, even when addresses are available. Thus, Medicare beneficiaries need to be geocoded to link to census geographies (such as tracts and block groups), a process that requires specialized software and may be time consuming. These estimates also include all members of households in a sample, and as such, the National Academies of Sciences, Engineering, and Medicine (NASEM) caution against using census-tract level and block-group level estimates as proxies for individual-level effects in older adults.[2] The NASEM also does not recommend extracting census-tract level data on older adults from the ACS, due to small sample sizes of older adults at that level of granularity.[2]

III. Quality and Resource Use Measures Evaluated

The following quality and resource use measures are the primary outcomes of interest for this analysis:

- Condition-specific readmissions—for acute myocardial infarction (AMI), congestive heart failure (HF), pneumonia, total hip arthroplasty/total knee arthroplasty (THA/TKA), or chronic obstructive pulmonary disease (COPD)—in the Hospital Readmissions Reduction Program (HRRP)
- All-cause hospital readmissions in the Merit-based Incentive Payment System (MIPS)
- Total per capita cost (TPCC) in the MIPS
- Home health agency hospitalization in the home health value-based purchasing (HHVBP) program

Additional details on these measures are included in the Chapter 7.

IV. Social Risk Factors Available in the ACS

The patient-level social risk factors available in the ACS are:

- Income
- Home Ownership
- Private Health Insurance Coverage
- Education
- Employment
- Race and Ethnicity
- Language
- Nativity
- Marital Status
- Living Alone

Many of these social risk factors —income, private health insurance coverage, education, language, living alone, home ownership (as a component of wealth), and marital status—were also evaluated using the Medicare Current Beneficiary Survey (MCBS) and are described in Chapter 8. Below are descriptions for the additional social risk factors available in the ACS.

A. Home Ownership

In the MCBS analysis, home ownership and total assets together were used to represent wealth (see Chapter 8). In the ACS analysis, home ownership is used as a proxy for wealth. Because wealth, like income, can be a means to acquire health care, it can be associated with health outcomes.[5,6] Wealth may be an even better indicator of socioeconomic position for Medicare beneficiaries, in fact, because it may capture more variation of accumulated economic resources among the elderly than income, particularly for retirees on fixed incomes.[7]

B. Employment

Unemployment has been shown to be associated with unhealthy behaviors, poor physical and mental health, and mortality.[8] However, because the Medicare population is more likely than the general population to be retired and therefore unemployed, the association between retirement and health outcomes in this group is less well known.[9]

C. Race and Ethnicity

The Institute of Medicine's 2002 landmark "Unequal Treatment" report provided extensive documentation that race and ethnicity are closely tied to overall health and specific health outcomes.[10] Both Black and Hispanic Americans have lower life expectancies and higher rates of chronic disease than their White counterparts. People who self-identify as racial or ethnic minorities are at higher risk of readmission following hospitalization and have worse experience with hospital care than non-minority populations (as measured by patient-experience surveys).[11-15] Paradoxically, for in-hospital mortality measures, findings are more mixed: prior studies have shown significantly lower mortality following acute myocardial infarction, heart failure, and pneumonia for Black and Hispanic Medicare beneficiaries; findings are particularly striking for Hispanics, with up to 50% lower cardiovascular mortality reported in multiple studies.[16-20]

Race- and ethnicity-based differences are also evident in the ambulatory setting. Hospital admissions for ambulatory care sensitive conditions, or those conditions for which high-quality primary care should decrease the likelihood of hospitalization, are higher for racial and ethnic minorities.[21] In addition, racial and ethnic minorities have lower rates of diabetes and hypertension control, and consequently, higher rates of heart attack, stroke, and other long-term consequences of these conditions.[22,23] While survival with chronic kidney disease is worse for Black and Hispanic beneficiaries compared to Whites, studies have documented a survival advantage for Black and Hispanic beneficiaries on dialysis compared to White beneficiaries.[24-26] In the post-acute setting, racial and ethnic minorities are more likely to go to low-quality skilled nursing facilities and to be readmitted to the hospital after discharge to a post-acute care facility.[27-29]

Most work on race- and ethnicity-based differences has focused on Black-White and Hispanic-White differences. As a result, much less is known for Asian Americans, Native Hawaiians, and other Pacific Islanders, American Indians, and Alaska Natives.

D. Nativity

Nativity, including whether an individual was born in the United States, immigration status, and acculturation, may differentially affect health outcomes.[9] A review of studies on immigrants and health care found that non-native Americans report worse experiences with the health system but lower health care costs.[30] Additionally, language barriers may be more common in non-native beneficiaries, with both factors affecting health outcomes.

V. Functional Risk Factors Available in the ACS

The functional risk factors available in the ACS are disability questions intended to estimate each disability for populations within the United States.[31] This study will use the following the patient-level functional risk factors from the ACS:

- Sensory disability (deaf and/or blind)
- Mental disability (learning, remembering, or concentrating)
- Activities of daily living and instrumental activities of daily living (ADLs/IADLs)

A. Sensory Disability

Sensory disabilities are captured through two questions in the ACS; one question asks about hearing difficulties and the other vision difficulties. These two questions address one of the domains of the concept of disability, specifically the communication domain. Together, the questions assess the respondent's limitations communicating with others.

B. Mental Disability

The ACS captures mental disability through a single question asking if the respondent has difficulty learning, remembering, or concentrating due to a physical, mental or emotional condition. This question addresses the mental domain of the concept of disability, assessing whether the respondent has psychological or neurological limitations.[31]

C. ADLs and IADLs

Activities of daily living (ADLs) attempt to measure a level of functional capacity or functional disability and have been used to capture concepts such as functioning, medical risk, and increasingly, frailty. ADLs as a scale or indicator of functioning have existed for over a half century, with Katz's ADL Index of Independence in Activities of Daily Living, the first widely used index, still serving as the basis for much work and research in this area.[32] They are described in more detail in Chapter 5.

Instrumental Activities of Daily Living (IADLs), also described in Chapter 5, are activities related to independent living, and similar to ADLs, have often been captured as a scale or index (such as the Lawton IADL Scale).[33] While ADLs generally address activities that must be done, IADLs are important for independent living but are not as essential for daily functioning. Thus, individuals who have difficulties with ADLs are typically not able to live alone without regular aid, while those with only IADL difficulties may be able to live alone with regular aid.

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Chapter 10. Summary: Potential Impacts of New Medical and Social Risk Adjustment on Beneficiaries, Plans, and Providers

This chapter summarizes the findings in previous chapters on the separate and combined impact of new medical and social risk factors on beneficiaries, plans, and providers.[a] It also compares findings from the different data sources used in this Report: Medicare claims linked to the Medicare Current Beneficiary Survey (MCBS) (referred to as claims+MCBS in the rest of this chapter) and claims only.[b]

Specifically, after reviewing the prevalence of functional and social risk factors in beneficiaries, this chapter reviews analyses of all-cause hospital readmissions and total per capita cost (TPCC) using claims+MCBS. It then reviews provider-level analyses using claims data for: 1) readmissions in hospitals, skilled nursing facilities (SNFs), and home health agencies and 2) Medicare spending per beneficiary (MSPB) and total per capita cost (TPCC) in physician practices. Finally, it reviews policy simulations conducted in Study B to evaluate the program-level impact of including additional social and functional risk factors in risk adjustment for quality and resource use measures.

I. Prevalence of Beneficiary Functional and Social Risk Factors

Findings from the analysis of functional risk indicate that dually enrolled beneficiaries are less healthy on average than other Medicare beneficiaries. Analysis of claims data indicates that they are more likely to be medically complex and to have more comorbid conditions as well. Findings described in the MCBS chapter (Chapter 8) similarly indicate that dually enrolled beneficiaries have relatively higher probabilities of having functional risk factors such as difficulties with activities of daily living (ADLs) and instrumental activities of daily living (IADLs) (Figure 10.1).

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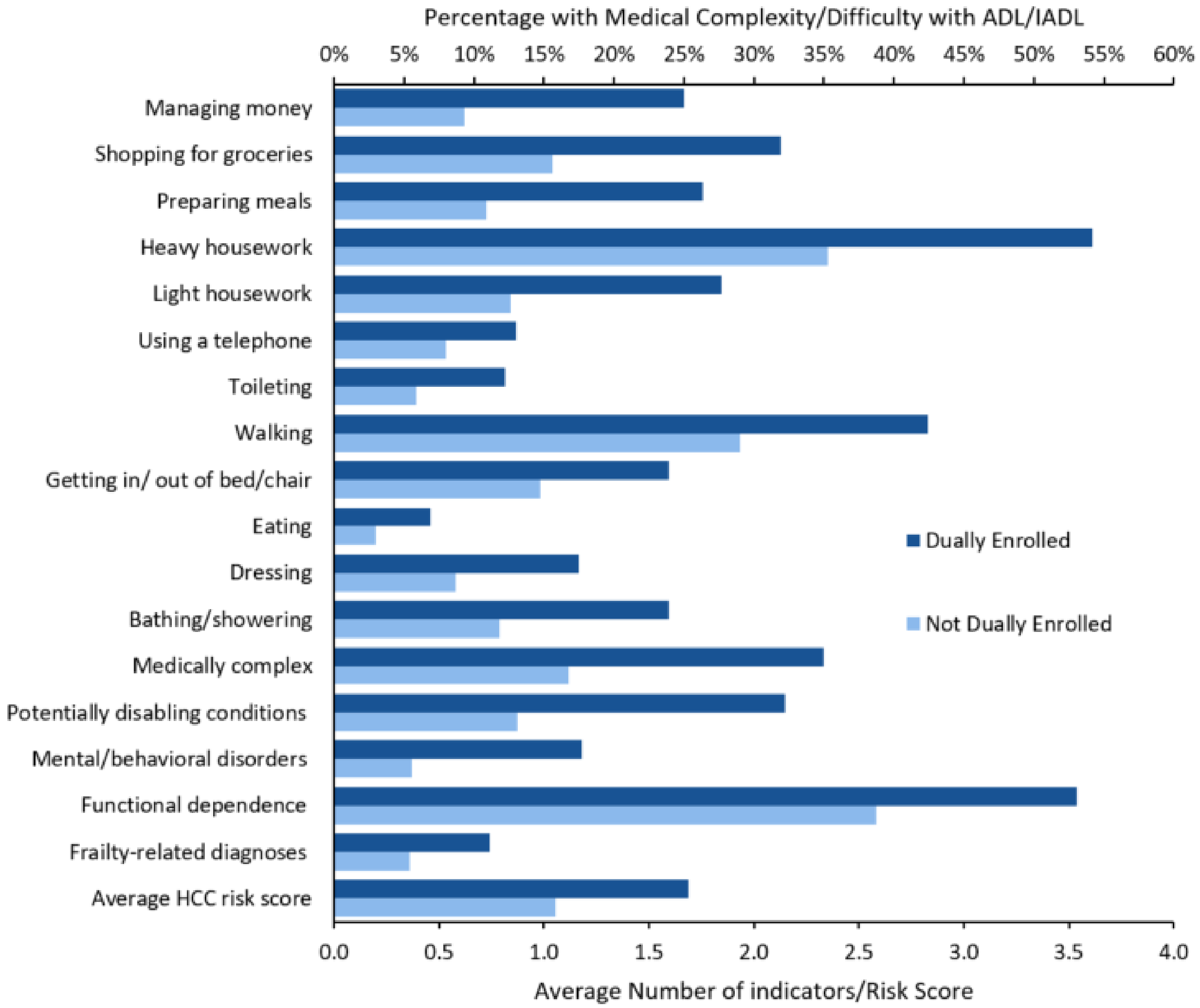
[a] Note that in this Report the term "providers" is used to indicate physicians, hospitals, dialysis facilities, nursing facilities, Medicare Advantage contracts, etc.

[b] Although Chapter 8 on the MCBS analyses presents findings on frailty-related diagnoses in the text and functional risk factors in its appendix, the findings from the MCBS reviewed in this chapter focus on functional risk factors more generally (not just frailty-related diagnosis) to facilitate the comparison with findings from the Chapter 7 on medical (functional) risk. Notably, too, findings from the frailty-related diagnoses and functional risk factors in the MCBS analyses were similar.

Figure 10.1. Prevalence of Beneficiary Functional Risk Factors: Claims+MCBS Data



ADL=activities of daily living; IADL= instrumental activities of daily living; HCC=hierarchical condition category; MCBS=Medicare Current Beneficiary Survey.

The same MCBS analyses described in Chapter 8 found that dually enrolled beneficiaries were more likely than other Medicare beneficiaries to have additional social risk factors (See Table 10.1). For example, dually enrolled beneficiaries were more likely to be unmarried (82% vs. 45%), have a language barrier (10% vs. 4%), live alone (34% vs. 28%), and not own a home (75% vs. 22%). Dually enrolled beneficiaries were less likely to be highly educated (46% vs. 19% with less than a high school diploma, and 5% vs. 23% with a bachelor's degree or more). In addition, dually enrolled beneficiaries were less likely than other beneficiaries to have private health insurance (11% vs. 65%) and to have a lower median annual household income ($11,000 vs. $42,000). They had extremely low median total assets compared to other beneficiaries ($100 vs. $159,000) as well.

These findings indicate that dually enrolled beneficiaries have a lifetime accumulation of disadvantage because they have other social risk factors in addition to dual enrollment, aligning with the life-course framework discussed in Chapter 2. Under this model, an individual's current health is influenced by the aggregate of the person's social risk over the lifespan, including childhood, parental factors, adult factors, and family in adulthood. The accumulation of disadvantage creates a challenge for health care providers attempting to address these risk factors and achieve high quality scores. Using this model, a factor such as wealth or total assets, for example, provide information about lifetime economic resources, and therefore might capture a broader view of socioeconomic position than income because it provides information about lifetime economic resources rather than resources coming in at a single moment in time. An internal analysis by the Office of the Assistant Secretary for Planning and Evaluation (ASPE) using MCBS data found that 40% of beneficiaries in the quartile with the lowest total assets were dually enrolled, whereas the highest total assets quartile had no dually enrolled beneficiaries.

Table 10.1. Prevalence of Social Risk Factors by Dual-Enrollment Status in the MCBS Sample

Social Risk Factor	All Beneficiaries	Dually Enrolled	Not Dually Enrolled
N	20,461	4,165	16,296
Not Married (%)	53	82	45
Education (%)			
Less than High School	24	46	19
High School	30	30	30
Less than Bachelor's Degree	27	20	29
Bachelor's Degree or More	19	5	23
Non-English Speaker (%)	5	10	4
Living Alone (%)	30	34	28
Private Insurance (%)	54	11	65
Do Not Own Home (%)	33	75	22
Median Income	$27,000	$11,000	$32,000
Median Total Assets	$127,000	$100	$159,000

Note: MCBS=Medicare Current Beneficiary Survey. Excludes respondents with missing values of social or medical risk factors.

Findings: Dually enrolled beneficiaries are more likely to have social and functional risk factors than other Medicare beneficiaries.

II. Analyses Using Claims and MCBS: Association between Functional Risk Factors, Existing Beneficiary Social Risk Factors, and Outcomes Evaluated

This section and the following two sections review findings from analyses using claims-only data or claims+MCBS data focused on the common outcomes (all-cause hospital readmissions and TPCC). The first section below reviews findings from all-cause hospital readmissions and TPCC using claims-only data as well as claims+MCBS. The next section reviews findings from the specific outcomes using claims-only data. The analyses using claims-only data examined the condition-specific readmission measures and MSPB. This analysis accounted for within-provider effects by using a random-effects model. However, a smaller sample size precluded accounting for the within-provider effect in the analyses of the MCBS data. The following section reviews findings on provider performance after accounting for social and functional risk using claims-only data. The last section reviews the simulations conducted, also using claims-only data.

A. All-Cause Hospital Readmissions

While analyses that included claims-only data were conducted for each one of five cohorts (surgical, medical, cardiorespiratory, cardiovascular, and neurology), the claims+MCBS analyses did not have sufficient samples and therefore were only conducted in the surgical and medical cohorts. To allow the two analyses (claims-only and claims plus MCBS) to be compared, this chapter reviews findings from the surgical cohort.

The analyses examined readmissions within the first 30 days after hospital discharge for dually enrolled beneficiaries to show the change in the probability of being readmitted for a dually enrolled vs. non-dually enrolled beneficiaries. The models include the dual-enrollment effect 1) with no risk adjustment, 2) with risk adjustment, 3) with additional functional risk factors, 4) with additional social risk factors, and 5) with both functional and social risk factors. In the claims+MCBS analyses, two different models included two groups of social risk factors (claims-based and MCBS).

As reviewed in Table 10.2, on average, in claims-only analysis dually enrolled beneficiaries in the surgical cohort had 52% higher raw odds of being readmitted than other beneficiaries in that cohort while they had 89% higher odds in the claims+MCBS analysis. After accounting for the measure risk adjustment (age and comorbidities), dually enrolled beneficiaries had 18% and 43% higher odds of readmission than other beneficiaries in the claims-only and claims+MCBS analyses, respectively. The risk-adjustment models correctly predicted readmissions for 65-71% of beneficiaries. Compared with the raw, unadjusted rates of readmission, clinical risk adjustment reduced the odds of readmissions among dually enrolled beneficiaries, but a dual-enrollment effect persisted.

Accounting for social risk factors in the model only slightly reduced the dual-enrollment effect and did not change the predictive power of the models. However, functional risk factors reduced the dual-enrollment effect more strongly; with adjustment for these factors, dually enrolled beneficiaries were only 6% and 26% more likely to be readmitted than other Medicare beneficiaries in the claims-only and claims+MCBS analyses, respectively. The predictive power of the models marginally increased to 68–73%. Including both social and functional risk factors in claims did not add to the predictive power of the model more than adding functional risk factors. In the MCBS analysis, including both functional and social risk increased the dual-enrollment effect, but this finding was not statistically significant and may relate to the small sample size.

These findings show that the dual-enrollment effect is consistently larger in the claims+MCBS than the claims-only analyses. This is probably related to including random effects, which isolated the within-hospital effect of social risk factors, in the claims-only analyses, as compared to the claims+MCBS analyses that estimated total (both within- and between-hospitals) effect.

Table 10.2. Association between Dual Enrollment and All-Cause Hospital Readmissions in the Surgical Cohort

Model	Dually Enrolled Beneficiary Odds of Readmission in the Surgical Cohort			
	Claims		Claims+MCBS	
	OR	C	OR	C
Raw Difference	**1.52**		**1.89**	
Measure Risk Adjustment (RA) Only	**1.18**	0.71	1.43	0.65
RA + Claims-Based Social Risk Factors	**1.15**	0.71	1.39	0.65
RA + Claims-Based + MCBS Social Risk Factors			1.78	0.70
RA + Functional Risk Factors	**1.06**	0.73	1.26	0.68
RA + Functional Risk Factors + Social Risk Factors	**1.05**	0.73	1.60	0.72

Notes: Bolded values are statistically significant at the p<0.05 level. Models using claims include TIN random effects. Claims-based social risk factors are rurality (living outside a metropolitan statistical area (MSA)), and race/ethnicity (Black, Hispanic, White, other), MCBS social risk factors are marital status, education, language, living alone, private health insurance, home ownership, income, and total assets; functional risk factors include claims-based functional risk factors (frailty-related diagnoses; functional dependence; mental, behavioral and neurodevelopmental disorders; and potentially disabling conditions) and MCBS activities of daily living (ADLs) + instrumental activities of daily living (IADLs) + general health. Claims analyses include claims-based functional risk factors only. MCBS=Medicare Current Beneficiary Survey; TIN=tax identification number

Findings: These findings are consistent with Study A's finding that disparities in readmissions by dual-enrollment status persist after accounting for the measure's current clinical risk adjustment. In both the claims and the MCBS all-cause hospital readmissions findings, accounting for social risk factors only slightly reduced the dual-enrollment effect compared with the clinically-adjusted rates of readmission. In contrast, accounting for functional risk factors had a greater effect on reducing the dual-enrollment effect.

B. Total per Capita Cost (TPCC)

Both the claims-only and the claims+MCBS analyses estimated the difference in annual spending between a dually enrolled beneficiary and a non-dually enrolled beneficiary. The models included the dual-enrollment effect 1) with no risk adjustment, 2) with the TPCC measure risk adjustment, 3) with additional functional risk factors, and 4) with additional social risk factors (both claims and MCBS social risk factors in the claims+MCBS analyses).

As reviewed in Table 10.3, on average, dually enrolled beneficiaries spent $6,100 more per year than other beneficiaries in the claims-only analyses and an additional $6,700 in the claims+MCBS analyses. After accounting for the measure risk adjustment—using the HCC risk score that includes age, gender, original reason for Medicare entitlement (age or disability), Medicaid enrollment, and medical history[a]—dually enrolled beneficiaries spent only $400 more than other beneficiaries in the claims-only analyses, and $2,200 more in the claims+MCBS analyses. This risk adjustment accounted for 25% (R^2=.25) of the variation in costs between beneficiaries.

Additionally accounting for social risk factors marginally reduced the difference between dually enrolled and other beneficiaries to $300 in claims-only analyses and $2,500 in claims+MCBS analyses, but did not explain more of the variation between patients. On the other hand, when the functional risk factors were added to the measure risk adjustment, dually enrolled beneficiaries had $1,000 less spending ($29 more spending from claims+MCBS analyses) than other beneficiaries, and the model explained an additional 10% (only additional 4% in the claims+MCBS analyses) of the variation in spending between patients. In the claims-only analyses, including both social and functional risk factors did not reduce the dual-enrollment effect further than including functional risk factors alone. Although including these factors increased the effect in the claims+MCBS analysis, results were not statistically significant and may have stemmed from the small sample size of the MCBS.

Similar to the all-cause hospital readmissions findings, these findings show that the dual-enrollment effect is consistently larger in the claims+MCBS than the claims-only analyses, again, probably related to including random effects in the claims-only analyses to isolate within-hospitals from between-hospitals effects.

Table 10.3. Association between Dual Enrollment and TPCC: Data from Claims Only and Claims+MCBS

Model	Claims Only	Model R^2	Claims+MCBS	Model R^2
Raw Difference	**$6,100**		**$6,700**	
Measure Risk Adjustment (RA) Only	**$400**	0.25	**$2,200**	0.25
RA + Claims-Based Social Risk Factors	**$300**	0.25	**$2,500**	0.25
RA + Claims-Based + MCBS Social Risk Factors			**$3,700**	0.26
RA + Functional Risk Factors	**-$1,100**	0.35	$29	0.29
RA + Functional Risk Factors + Social Risk Factors	**-$900**	0.35	$2,520	0.30

Notes: Bolded values are statistically significant at the $p<0.05$ level. Claims-only models include TIN random effects. Claims-based social risk factors are rural (living outside a metropolitan statistical area (MSA)), and race/ethnicity (Black, Hispanic, White, other). MCBS social risk factors are marital status, education, language, living alone, private health insurance, home ownership, income, and total assets. Claims-based functional risk factors are frailty-related diagnoses; functional dependence; mental, behavioral and neurodevelopmental disorders; and potentially disabling conditions. MCBS functional risk factors are activities of daily living (ADLs), instrumental activities of daily living (IADLs), and general health. Claims analyses include claims-based functional risk factors only. MCBS=Medicare Current Beneficiary Survey; TIN=taxpayer identification number; TPCC=total per capita costs.

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[a] HCC=Hierarchical Condition Category, a model used to rank diagnoses into categories representing conditions with similar cost patterns.

Findings: These findings are consistent with Study A's finding that disparities in spending by social risk persist after accounting for the measure risk adjustment. They suggest that some of the disparities in TPCC observed between dually enrolled and other beneficiaries are in fact due to unmeasured medical risk and, to a lesser extent, other social risk factors. These findings also confirm that dual enrollment is the most significant social risk factor among those available in Medicare claims or MCBS, and that the current method of including dual enrollment as part of the HCC risk score does not fully account for differences between dually enrolled and other beneficiaries.

III. Analyses Using Claims Only: Association between Functional Risk Factors, Beneficiary Social Risk Factors, Outcomes, and Provider Performance

This section reviews findings from analyses that used claims and area-level data to examine specific outcomes: condition-specific readmission measures, all-cause hospital readmissions, MSPB, and TPCC. It also reviews findings on provider performance after accounting for social and functional risk. Providers include hospitals, SNFs, and home health agencies. Provider performance includes the probability of readmission, MSPB hospital-episode spending, and TPCC. Although these measures are included together, it is important to note that the outcomes (even among readmission measures) are slightly different; they assess performance among different populations and include different risk adjustment factors.

A. Probability of Readmission for Dually Enrolled Beneficiaries across Providers

As reviewed in Table 10.4, dually enrolled beneficiaries had 9-52% higher odds on average of being readmitted than other beneficiaries, depending on the measure. After accounting for the measure risk adjustment (age and comorbidities), dually enrolled beneficiaries had 16–20% higher odds of readmission than other beneficiaries for most readmission measures. However, dually enrolled beneficiaries were 3% less likely to be readmitted to a SNF (odds ratio of 0.97) than other beneficiaries. The risk-adjusted models correctly predicted readmission for 67–71% of beneficiaries, as indicated by a c-statistic. Additionally accounting for social risk factors only slightly increased the odds of being readmitted (13–20% higher) and did not change the predictive power of the models. When the functional risk factors were added to the measure risk adjustment, the odds ratios dropped, with dually enrolled beneficiaries then having only 5–16% higher odds of readmission, and the predictive power of the model marginally increasing to 69–73%. For SNF readmission, accounting for social risk factors did not change the odds of being readmitted or the predictive power of the model. Adding functional risk factors to the SNF readmission measure risk adjustment did not change the disparity in readmission rates, but increased the predictive power of the model marginally to 70%.

Table 10.4. Associations Between Dual Enrollment, Readmission, and Hospital Admission

Model	Odds of Readmission for Dually Enrolled Beneficiaries							
	Hospital AMI		Hospital (surgical cohort)		SNF		Hospital Admission from HHA	
	OR	C	OR	C	OR	C	OR	R^2
Raw Difference	1.46		1.52		1.09		1.31	
Measure Risk Adjustment (RA) Only	1.16	0.67	1.18	0.71	0.97	0.68	1.20	0.09
RA + Social Risk Factors	1.13	0.67	1.15	0.71	0.97	0.68	1.20	0.09
RA + Functional Risk Factors	1.10	0.69	1.06	0.73	0.97	0.70	1.16	0.12
RA + Functional Risk Factors + Social Risk Factors	1.09	0.69	1.05	0.73	0.96	0.70	1.16	0.12

Notes: All odds are statistically significant at $p<0.05$. All models include hospital random effects. Social risk factors include: rurality (living outside a metropolitan statistical area (MSA)), race/ethnicity (Black, Hispanic, White, other), ZIP code median income, social deprivation index (SDI), and social capital index). Functional risk factors include: frailty-related diagnoses; functional dependence; mental, behavioral and neurodevelopmental disorders; potentially disabling conditions; and disabled as the original reason for Medicare enrollment. AMI=acute myocardial infarction; OR=odds ratio; C=c-statistic, SNF=skilled nursing facility, HHA=home health agency.

Findings: These findings are consistent with Study A's finding that disparities in readmissions by dual-enrollment status persist after accounting for the measures' current clinical risk adjustment. While adding additional social risk factors to the models did not improve disparities meaningfully, adding functional risk factors to the models explained more of the difference in readmission rates and also improved model performance. Even after adding all functional and social risk factors to the model, dually enrolled beneficiaries still had higher readmission rates than non-dually enrolled beneficiaries. These findings are also consistent with Study A's finding that the risk adjustment already used in the SNF readmission measure accounts for most of the differences between dually enrolled and other beneficiaries. In the other measures, the risk adjustment accounts for at least half of the differences in readmission rates between dually enrolled and other beneficiaries.

B. Probability of Hospital Readmissions across Safety-Net Providers

As reviewed in Table 10.5, on average, beneficiaries discharged from high-Disproportionate Share Hospitals (DSHs), high-dual physician practices, or high-dual SNFs (safety-net providers) had 16-53% higher odds of readmission than other beneficiaries, depending on the setting. Beneficiaries admitted to hospitals from high-dual home health agencies (HHAs) had 50% lower odds of admission than other beneficiaries. After accounting for the measure risk adjustment, beneficiaries readmitted from high-DSH hospitals, high-dual practices, or high-dual SNFs still had 6-21% higher odds of readmission than beneficiaries discharged from other hospitals, although beneficiaries in high-dual HHAs had 39% lower odds of hospital admission than beneficiaries in other HHAs. Additionally accounting for social risk factors reduced the disparity in hospital readmission to 1-18%. Accounting for additional functional risk factors did not meaningfully change the odds ratios obtained from current clinical risk adjustment.

Table 10.5. Associations between Safety-Net Providers and Readmission

Model	High-DSH Hospital (AMI)	High-Dual Practice (surgical cohort)	High-Dual SNF	High-Dual HHA Hospital Admission
Raw Difference	**1.16**	**1.53**	**1.24**	**0.50**
Measure Risk Adjustment (RA) Only	**1.06**	**1.21**	**1.10**	**0.61**
RA + Social Risk Factors	1.01	**1.18**	**1.07**	**0.61**
RA + Functional Risk Factors	**1.06**	**1.10**	**1.11**	**0.66**
RA + Functional Risk Factors + Social Risk Factors	1.01	**1.09**	**1.08**	**0.66**

Notes: Bolded odds ratios are statistically significant at p<0.05. All models include hospital random effects. Social risk factors include: rurality (living outside a metropolitan statistical area (MSA)), race/ethnicity (Black, Hispanic, White, other), ZIP code median income, social deprivation index (SDI), and social capital index). Functional risk factors include: frailty-related diagnoses; functional dependence; mental, behavioral and neurodevelopmental disorders; potentially disabling conditions; and disabled as the original reason for Medicare enrollment. AMI=acute myocardial infarction; DSH= disproportionate share hospital; HHA=home health agency; SNF=skilled nursing facility.

Findings: High-DSH hospitals, high-dual practices, and high-dual SNFs have higher readmission rates than their non-safety-net counterparts. Accounting for the measure risk adjustment, functional risk factors, and social risk factors thus meaningfully reduced but did not eliminate this difference in readmission rates between high-DSH hospitals, high-dual practices, or high-dual SNFs and their non-safety-net counterparts. However, the finding that beneficiaries admitted to HHAs serving a large proportion of dually enrolled beneficiaries were less likely to be admitted to hospitals suggests a protective effect for beneficiaries who use high-dual HHAs, which needs to further investigation.

IV. MSPB and TPCC across Practices

In contrast to the higher costs for dually enrolled patients discussed above, hospitals with a high Disproportionate Share Hospital (DSH) Index have average costs per episode that are 3.2% lower than other providers (see Table 10.6). However, after risk adjusting the MSPB measure, both groups of hospitals have similar costs per episode. Accounting for beneficiary social risk did not change this finding, but accounting for functional risk factors increased costs by 1.4% for high-DSH hospitals. Including both social and functional risk factors in the model eliminated the difference between the two types of hospitals.

As reviewed in Table 10.6, physician practices serving a high proportion of dually enrolled beneficiaries have average annual per capita costs $7,400 greater than other providers. After accounting for the measure risk adjustment, high-dual practices still had average per capita costs $3,000 greater than other practices; accounting for additional social risk factors yielded the same result. Accounting for both the measure risk adjustment and additional functional risk factors reduced the difference in average per capita costs to $1,500 between high-dual and other practices.

Table 10.6. Association between High-Dual Practices and Resource Use Measures

Model	Difference in MSPB for High-DSH Hospitals: Coefficient	Difference in MSPB for High-DSH Hospitals: Spending Increase	Difference in TPCC between High-Dual and Other Practices
Raw Difference	**-0.032**	-3.2%	**$7,400**
Measure Risk Adjustment (RA) Only	**0.007**	0.7%	**$3,000**
RA + Social Risk Factors	**0.004**	0.4%	**$3,000**
RA + Functional Risk Factors	**0.014**	1.4%	**$1,500**
RA + Functional Risk Factors + Social Risk Factors	**0.001**	0.1%	**$1,700**

Notes: Bolded values are statistically significant at $p<0.05$. Coefficient is the coefficient on the dually enrolled beneficiary variable in a gamma model. All models include hospital random effects. Social risk factors include: disabled as the original reason for Medicare enrollment, rurality (living outside a metropolitan statistical area (MSA)), race/ethnicity (Black, Hispanic, White, other), ZIP code median income, social deprivation index (SDI), and social capital index). Functional risk factors include: frailty-related diagnoses; functional dependence; mental, behavioral and neurodevelopmental disorders; and potentially disabling conditions. MSPB=Medicare Spending per Beneficiary; TPCC=total per capital cost.

Findings: Similar to the beneficiary-level analysis, these findings suggest that some of the disparities in episode spending between high-DSH and other hospitals or in the TPCC between high-dual and other practices are in fact due to differences in functional risk. Adjusting for functional risk in the measure risk adjustment would account for some of the variation by dual enrollment and also improve the measure risk adjustment.

V. Policy Simulations: Impact on Hospitals' Performance and Penalties

This Report, using Medicare claims, evaluated the impact of including additional social and functional risk factors in quality and resource use measures' risk adjustment by simulating three policy options:

1. Adding dual-enrollment status in the risk adjustment
2. Adding functional risk factors (frailty-related diagnoses; functional dependence; mental, behavioral and neurodevelopmental disorders; and potentially disabling conditions) in the risk adjustment
3. Adding dual-enrollment status and functional risk factors in the risk adjustment

These simulations were evaluated for three value-based purchasing (VBP) programs:

1. The Hospital Readmissions Reduction Program (HRRP)
2. The cost category of the physician Merit-Based Incentive Program (MIPS)
3. The Skilled Nursing Facility Value-Based Purchasing Program (SNF VBP)

The effect of adjusting for dual enrollment and/or functional risk varied across these programs, due to the differences in current risk adjustment approaches, differences in the relationship between the risk factors and the outcomes being assessed, and differences in the programs' formulas to convert measure performance into payment adjustments (Table 10.7).

Findings: Under all three programs evaluated, safety-net providers had worse performance and larger penalties. The simulations showed that adjusting the HRRP readmission measures for dual-enrollment status, but not functional risk, would reduce penalties for high-DSH hospitals. In contrast, for the MIPS cost category, adjusting for functional risk only had a larger impact on high-dual practices than adjusting for social risk. The SNF VPB had the smallest disparity between safety-net and other providers in the current program, and so it was not surprising that additional risk adjustment for dual enrollment or functional risk made almost no difference in average performance.

Table 10.7. Risk Adjustment Policy Simulations Using Claims-Based Social and Functional Risk Factors

	Current CMS Measure			Adjust for Dual Enrollment Only			Adjust for Functional Risk Only			Adjust for Dual Enrollment & Functional Risk		
Average	Safety-Net	Other	Diff	Safety-Net	Other	Diff	Safety-Net	Other	Diff	Safety-Net	Other	Diff
Hospital Readmissions Reduction Program												
Penalty (%)	1.34%	1.53%	**-0.19%**	1.29%	1.52%	**-0.23%**	1.32%	1.51%	**-0.19%**	1.29%	1.51%	**-0.21%**
Penalty ($)	$456,000	$494,000	**-$38,000**	$442,000	$495,000	**-$54,000**	$451,000	$491,000	**-$40,000**	$443,000	$492,000	**-$49,000**
MIPS Cost Category												
Category Score	5.6	6.2	**-0.6**	5.7	6.2	**-0.5**	5.9	6.2	**-0.3**	5.7	6.2	**-0.4**
SNF VBP												
Readmission Rate	19.5%	19.1%	**0.4%**	19.6%	19.1%	**0.4%**	19.5%	19.1%	**0.4%**	19.5%	19.1%	**0.4%**
Incentive Payment (%)	-0.9%	-0.7%	**-0.1%**	-0.9%	-0.7%	**-0.2%**	-0.9%	-0.7%	**-0.1%**	-0.9%	-0.7%	**-0.2%**
Incentive Payment ($)	-$11,600	-$14,500	**$3,000**	-$11,700	-$14,500	**$2,700**	-$11,600	-$14,500	**$3,000**	-$11,800	-$14,500	**$2,600**

Notes: For the hospital readmissions reduction program, safety-net hospitals are in the top 20% by disproportionate share (DSH) index. For the MIPS cost category and SNF VBP, safety-net providers are those in the top 20% by proportion of dually enrolled beneficiaries served. CMS=Center for Medicare & Medicaid Services; MIPS=Merit-based incentive program; SNF VBP=skilled nursing facility value-based purchasing program.

VI. Key Findings

1. Dually enrolled beneficiaries have a higher prevalence of social and medical risk factors.

This Report, consistent with Study A's findings, shows that dually enrolled beneficiaries face more social and medical risks than other beneficiaries. In addition to have lower income and assets and less education and social relationships, they are more likely to be non-English speakers and less likely to own a home or have private insurance. They are also more likely to have functional limitations, including each activity of daily living (ADL) and instrumental activity of daily Living (IADL). Dually enrolled beneficiaries are more than twice as likely as other beneficiaries to report being in fair or poor health.

2. Of all available social risk factors, dual enrollment and social relationships are the strongest predictors of poor outcomes.

In addition to dual enrollment, additional functional risk factors are statistically significantly related to higher spending and higher readmission rates. All three functional status risk factors evaluated using the MCBS (limitations in ADLs, limitations in IADLs, and frailty indicators), are associated with these poor outcomes, even after including the measures' risk adjustment and the social risk factors available in the MCBS. It is not possible to evaluate the three functional risk factors using Medicare claims data because the claims data include only indicators of functional status, but not information about ADLs or IADLs. Findings from both claims and MCBS data indicate that additional adjustment for functional risk using the available data would improve measure risk adjustment. It also shows that some of the differences observed between dually enrolled beneficiaries and other beneficiaries are due to differences in functional risk.

3. Accounting for functional risk generally lowers the effect of dual enrollment (and in some cases eliminates it). However, dually enrolled beneficiaries still have worse outcomes, even after accounting for functional risk factors.

Adjusting for functional risk factors improves the performance or explanatory power of the current risk-adjustment methodologies for all measures assessed and reduces—but does not eliminate—disparities between dually enrolled and other beneficiaries.

4. The effect of including functional risk factors varies by measure, in part due to differences in risk-adjustment models. Claims-based approaches to assessing functional risk factors are feasible and improve the explanatory power of measure risk adjustment.

As described in Chapter 7, the variable ability of risk adjustment to improve the model's explanatory power and reduce disparities for different quality and resource use measures stems in part from a differential effect of functional risk across measures as well as differences in existing risk adjustment approaches across measures. Despite this variation, claims-based approaches to capturing functional risk factors are feasible and improve the risk-adjustment models that only use comorbidities for measures examined. In addition, because some of the observed effect of social risk may actually be due to functional risk, including functional risk factors would allow for a more accurate assessment of social risks, although further analysis is required to determine which functional risk factors to include.

5. **Adjusting measures for social or functional risk factors reduces the disparity between safety-net and other providers, although these adjustments have only a small effect on VBP program payment adjustments.**

For the VBP programs evaluated in this study–the HRRP, MIPS cost category, SNF VBP, and Home Health Value-Based Purchasing (HHVBP) program—adjusting measures for additional social or functional risk factors makes only small average differences in program impacts between safety-net or high-dual providers and other providers. Adjusting for beneficiary dual-enrollment status and/or functional risk each affects this disparity in only some of these programs.

In the HRRP analyses, for example, adjustments for dual-enrollment status and for both functional risk and dual-enrollment status—but not adjustment for dual-enrollment status alone—affected disparities in current penalties between safety-net hospitals and other hospitals. In contrast, the difference in the MIPS cost category between high-dual and other practices falls minimally from 0.6 points (out of 10) to 0.5 points with adjustment for beneficiary dual enrollment, 0.3 points with adjustment for functional risk, and 0.4 points when adjusting for both. In the SNF VBP, additional risk adjustment for dual enrollment and/or for functional risk do not change disparities in payment reductions between high-dual and other SNFs.

Section 3: Emerging Areas

Chapter 11. Emerging Areas in the Role of Social Risk in Medicare's Value-Based Purchasing Programs

As described in Chapter 1, the Improving Medicare Post-Acute Care Transformation (IMPACT) Act of 2014 asked the Assistant Secretary for Planning and Evaluation (ASPE) to evaluate the role of social risk in Medicare's value-based purchasing (VBP) programs using existing Medicare data (Study A) and additional sources of social risk data (Study B). ASPE was also tasked with using the findings from these studies to make recommendations on (1) which social risk factors the Centers for Medicare & Medicaid Services (CMS) should collect or access for Medicare's VBP programs and (2) how those social risk factors should be used in the measures and programs.

In developing the strategy for addressing social risk in Medicare's VBP programs in Study A, it became clear that accounting for social risk encompasses much more than quality and resource use measures and much more than just Medicare: achieving high-quality care for socially at-risk beneficiaries also requires work in the larger health care system of which Medicare is a part. Thus, although ASPE's first strategy of setting high, fair quality standards for all beneficiaries focuses primarily on Medicare's quality and resource use measures, the other two strategies go beyond these measures. Specifically, the strategy of measuring and reporting quality for beneficiaries with social risk factors requires that socially at-risk beneficiaries be identified through appropriate data collection. Meanwhile, the strategy of rewarding and supporting better outcomes for beneficiaries with social risk factors requires that actors throughout the health system, including payers, providers,[a] and the community, have the tools to achieve good outcomes for socially at-risk beneficiaries.

To address all three strategies, this Report looks at the larger delivery system transformation landscape, both inside and outside the federal government. As more payments move from fee-for-service to VBP throughout this landscape, providing high-quality care requires addressing the underlying social risks that affect patient outcomes. Some organizations and communities are further along in achieving this goal than others. This Section of the Report ("Emerging Areas") focuses on the current state of these transformation efforts in the US health-care delivery system and what may be needed to provide high-quality care for all patients.

I. Analyses Included

This chapter and the two that follow describe qualitative analyses evaluating the current state and future directions of delivery system reform to address social risk, focusing on two areas:

1. The current state of social risk data collection, including which social risk factors are being collected, which screening tools are being used, and how beneficiary social risk information is being recorded and shared.

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[a] Note that in this Report the term "providers" is used to indicate physicians, hospitals, dialysis facilities, nursing facilities, Medicare Advantage contracts, etc.

2. The current state of interventions to address beneficiaries' social needs, including which social needs are being addressed, how beneficiaries are identified for interventions, and how the health care system is working with communities and social service providers to address identified needs. Additionally discussed is the evaluation of existing interventions and what needs to be done to determine and disseminate information about the most effective interventions in addressing social needs and achieving high-quality outcomes. Transforming the delivery system to realize the goals of better health outcomes and increased value will require disseminating these potential best practices throughout the health care delivery system.

These two topics were addressed using data from a Request for Information (RFI), interviews with electronic health record (EHR) vendors, and case studies of Medicare Advantage (MA) plans. Each of these data sources is described below.

A. Request for Information on Provider and Health Plan Approaches to Improve Care for Medicare Beneficiaries with Social Risk Factors

In the fall of 2018, ASPE issued a Request for Information (RFI) asking generally, "How are providers and health plans serving Medicare beneficiaries working to improve health outcomes for beneficiaries, especially those with social risk factors?" More specifically, the RFI asked how providers and health plans capture beneficiaries' social risk and about services targeted to Medicare beneficiaries with social risk factors.

ASPE received 77 responses to the RFI, 62 from providers including health systems, medical specialty organizations, hospital associations, insurers, health departments, post-acute care providers, and physician groups. Other submitters included health IT (information technology) providers, consultants, quality-improvement organizations, accreditation organizations, social service providers, patient advocacy groups, and public relations firms.

The RFI asked how providers and health plans are collecting and using data on Medicare beneficiaries' social risk factors with the following questions:

- Which social risk factors are most important to capture?
- Do you routinely and systematically collect data about social risk? Who collects this data? When is it collected? Is it collected only once or multiple times for a beneficiary? Is it collected consistently across populations (i.e., Medicare beneficiaries, Medicaid beneficiaries, patients receiving specific services, etc.)? What are the burdens of this data collection on plans, providers, and beneficiaries?
- Would standardized data elements for EHRs help you to collect social risk data? If so, how could these data elements be standardized?
- What are barriers to collecting data about social risk? How can these barriers be overcome?
- What do you see as promising future opportunities for improving data collection? For using existing or future data to tailor services?

The RFI also asked how services are targeted to Medicare beneficiaries with social risk factors in the following questions:

- Are social risk data being used to target services or provide outreach? If so, how? How are beneficiaries with social risk factors identified?
- Are there especially promising strategies for improving care for patients with social risk?
- How are costs for targeting and providing those services evaluated? What are the additional costs to target services, such as case management, and to provide additional services (e.g., transportation)? What is the return on investment in improved outcomes or reduced health care costs?
- What are the best practices to refer beneficiaries to social service providers that can address social risk factors?
- What lessons have been learned about providing care for patients with social risk factors?
- What are barriers to tailoring services to patients with social risk factors? How can barriers be overcome?
- For patients with social risk factors, how does patients' disability, functional status, or frailty affect the provision of services?

The following two chapters contain summaries of the comments submitted in response to these questions. These comments are available on ASPE's website.[a]

B. Interviews with EHR Vendors

To understand which social risk factors are being collected and how this data collection is happening, the ASPE also commissioned a study to interview EHR vendors about social risk data collection. The interviews sought to 1) identify vendors' motivations to develop social risk software products, 2) describe their products and uses, and 3) identify facilitators and challenges to the collection and use of social risk data. The interviews included six EHR vendors with large market shares in both ambulatory and inpatient settings. A summary of the findings is included in the next chapter (Chapter 12), and the full report is available on ASPE's website.[b]

C. Case Studies of Medicare Advantage Plans

To better understand the Medicare program's current approaches to addressing the social and health needs of dually enrolled beneficiaries, ASPE commissioned a study to conduct an environmental scan, interviews, and case studies of MA plans with high proportions of dually enrolled beneficiaries and high quality scores. The specific goals of this research, conducted in two phases, were to (1) characterize the needs of dually enrolled beneficiaries and the degree to which their needs overlap with those of other high-cost, high-need individuals more broadly; (2) identify the additional services that health plans provide to dually enrolled beneficiaries or other high-cost, high-need beneficiaries; (3) identify the range

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[a] https://aspe.hhs.gov/social-risk-factors-and-medicares-value-based-purchasing-programs-request-information

[b] https://aspe.hhs.gov/pdf-report/incorporating-social-determinants-health-electronic-health-records-qualitative-study-perspectives-current-practices-among-top-vendors

of added costs and resources needed to deliver these services and determine whether health plans find these services to be of value; and (4) assess available evidence on whether such services are associated with better quality and outcomes. This research included interviews with key informants from seven organizations and four in-depth case studies with MA plans. Chapter 13 on best practices provides a summary of the findings, and the full reports are available on ASPE's website.[a]

D. Best Practices in Providing Care to Socially At-Risk Beneficiaries

For Study C, ASPE asked the National Academies of Science, Engineering, and Medicine to identify best practices of high-performing hospitals, health plans, and other providers that serve disproportionately higher shares of socioeconomically disadvantaged populations and to compare those best practices to practices of low-performing providers serving similar patient populations. Chapter 13 on best practices summarizes this report, which is available in full online.[b]

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[a] https://aspe.hhs.gov/pdf-report/types-and-costs-services-dual-beneficiaries-medicare-advantage-health-plans-environmental-scan
https://aspe.hhs.gov/pdf-report/addressing-social-determinants-health-needs-dually-enrolled-beneficiaries-medicare-advantage-plans-findings-interviews-and-case-studies

[b] https://aspe.hhs.gov/social-risk-factors-and-medicares-value-based-purchasing-programs-reports

Chapter 12. Collecting and Using Social Risk Data

National- and state-level efforts to identify and address the needs of patients with social risk factors are growing. However, lack of standardization may impede sharing and using these data. Since the collection and use of these data are growing areas of focus in research and policy, a review of the current literature was not sufficient to describe the current landscape. For that reason, qualitative research was conducted to determine how stakeholders are collecting and using social risk data, including information from providers[a] and plans via the Office of the Assistant Secretary for Planning and Evaluation's (ASPE's) Request for Information (RFI) on current social risk data collection and how this data may be used to inform interventions, monitor quality, determine payments, or allocate resources. This chapter reviews the results of these efforts and discusses emerging applications in which social risk data may be used to stratify patients or measure disparities.

Study A presented a three-pronged strategy to account for social risk in Medicare payment programs. This chapter discusses the first prong of the strategy: measure and report quality for beneficiaries with social risk factors. In addition to improving social risk data collection, this part of the strategy includes considerations to improve statistical techniques for reporting measures on patient subgroups, introduce health equity measures or domains into existing payment programs to measure disparities and incent a focus on reducing them, and prospectively monitor the financial impact of Medicare value-based purchasing (VBP) programs on safety-net providers. Since Study A was completed in December 2016, a substantial amount of progress has been made in these areas.

Efforts have also already begun to improve data collection and sharing of social risk data across providers and payers. At the same time, there has been a focus on reporting measures by patient subgroups and providing information about socially at-risk beneficiaries' health outcomes. Early efforts have also begun to develop measures of health equity and ways to measure and track health disparities.

I. Data Collection

In addition to identifying efforts to collect social risk data by providers and health plans, this study examined current data collection efforts by considering patient screening tools, the challenges of data sharing and interoperability, and the opportunities in post-acute care (PAC) assessment tools.

A. Social Risk Data Collection in Medicaid

Over a third of Medicaid managed care plans reported collecting or planning to collect data on social risk in the 2018-2019 plan year.[1] For example, Michigan's Pathways to Better Health program deploys community health workers to identify the greatest social needs of Medicaid beneficiaries in certain counties during monthly home visits. Social needs are identified through a standardized checklist electronically administered, and data are stored in an online database available to authorized staff and

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[a] Note that in this Report the term "providers" is used to indicate physicians, hospitals, dialysis facilities, nursing facilities, Medicare Advantage contracts, etc.

practitioners.[2] Multiple states have also created websites that allow organizations to screen for social risks, and individuals to enroll in a range of public benefits to address them such as the Supplemental Nutrition Assistance Program (SNAP) and housing assistance. Given the socially complex population Medicaid serves and the existing relationships the agencies have with public and private actors in the health sector, Medicaid has the potential to help coordinate and standardize efforts to collect and leverage social risk data. However, the way in which social risk data is collected and used remains inconsistent.[3]

B. Provider and Health Plan Comments on Social Risk Data Collection

As discussed in the previous chapter, in the fall of 2018, ASPE issued a Request for Information (RFI) asking generally, "How are providers and health plans serving Medicare beneficiaries working to improve health outcomes for beneficiaries, especially those with social risk factors?" More specifically, the RFI asked how providers and health plans were collecting and using data on Medicare beneficiaries' social risk factors. Comments, summarized below and available in full on ASPE's website, addressed current data collection approaches and challenges in collecting patient social risk data.[4]

1. Current Data Collection

The submitted responses to the RFI mention a variety of social risk factors that are currently collected. Some of the most commonly mentioned are sociodemographics, individuals living with the beneficiary, social support, home environment and safety, financial difficulties and insurance status, access to transportation, food insecurity and nutrition, and health literacy. Many organizations also use area-level measures based on the beneficiary's address. These area-level measures may come from census data and/or be developed by community organizations.

The process of collecting data on beneficiaries' social risk factors also differs across organizations. Many organizations use screening tools, usually based on existing tools that may be modified for the specific community or organization's needs. The most common ways of collecting these data focus on a subset of beneficiaries that are most likely to be socially at-risk, such as collecting data as part of case management assessments or evaluations, home visits, or home assessments. These assessments or evaluations are often administered by community health workers, social workers, or care managers.

In terms of which social risk factors should, as opposed to are, currently collected, all the risk factors that are already collected were mentioned, and more. There seemed to be no consensus, however, on which risk factors should be collected or which are the most important to capture given the limited resources available for additional data collection. Some respondents mentioned that the most important risk factors may depend on the health care setting (e.g., inpatient vs. community) and location (e.g., rural vs. urban). Differences between settings are thus a particular challenge in terms of standardizing screening tools and data elements across the health care system.

Some commenters said that social risk information is included in the free text notes of the electronic health record (EHR). Many saw value in standardizing data elements and interoperability for social risk factors, which would allow providers to store and share social risk information about beneficiaries. Other commenters believe that social risk data would be better collected using ICD-10 (International Classification of Diseases, Tenth Revision) z-codes. Either way, the comments noted that providing interoperability or data collection standards alone may not be enough; payers would still need to incentivize providers to collect these data.

2. Challenges in Collecting Social Risk Data

Commenters mentioned numerous challenges in collecting information about beneficiaries' social risk. One of the most commonly mentioned was a lack of time and the cost of collecting these data. In particular, given the limited time that organizations have with beneficiaries, social risk information may not be a top priority. Additionally, providers are not reimbursed or incentivized to collect these data. Specific to the MA program, one commenter noted that because the proportion of enrollees that complete a health risk assessment affects plans' Star Ratings, plans are actually incentivized to use a shorter health risk assessment that collects less data on each beneficiary to achieve a higher overall completion rate.

RFI commenters also discussed challenges in the data collection process. Some felt that collecting social risk information may require specific training, particularly for more sensitive information. Commenters were also concerned about beneficiary privacy when answering questions about social risk, especially if the data collection is done in a public space such as a waiting room. Some felt that beneficiaries need an explanation of the importance of social risk data, as they may be unfamiliar with providers asking about social needs. Some comments also mentioned that there may be language barriers when asking about social needs. To address many of these challenges, one organization trains all patient-facing staff to ask about social risk and about how to respond when social needs are identified.

Some commenters were concerned about collecting social risk information without being able to address individual social needs. For this purpose, more nuanced data than a simple yes/no response may be required.

C. Patient Screening Tools for Social Risk Factors

Many of the recent initiatives to collect social risk information have focused on screening tools to identify social needs that are most actionable by providers, like food and housing insecurity. After identifying social needs, providers can refer patients to community resources such as food pantries or housing agencies for assistance.

In response to the ASPE's RFI, many organizations mentioned the wide variety of tools used to collect social risk information. Organizations responded that they choose from existing social needs screening tool or develop their own, based on an individual organization's specific needs. As a result, these different tools capture social risk factors using varying questions. The problem is exacerbated in that only some of these screening instruments are able to capture these data as standardized terminology.This limits the ability to exchange data between providers or organizations.The literature clearly demonstrates this lack of standardization, noting that electronic health systems consistently lack a strong base of evidence and infrastructure to support tasks like tracking results of referrals, maintaining lists of community service providers, and showing quality ratings.[5] In one case, researchers looked to see how Federally Qualified Health Centers (FQHCs) screen for these data and found a lack of standardization.[6] All health centers polled in the RFI asked their clients about a core set of 13 social risk factors. Other factors like demographics, employment status, family and living arrangement, and mental health appeared in many of the assessments, while only forty percent of the FQHCs studied included questions on culture and functional status.[6]

A summary of social risk screening tools and indicators prepared by researchers in the Social Interventions, Research and Evaluation Network (SIREN) at University of California at San Francisco identifies different social need screening tools, listed below:[7]

- CMS (Centers for Medicare & Medicaid Services) Accountable Health Communities Health-Related Social Needs Screening Tool
- HealthBegins Upstream Risk Screening Tool
- Health Leads Social Needs Screening Toolkit
- National Center for Medical-Legal Partnerships, The Advisory Board Company, Medical-Legal Partnership Screening Guide
- Kaiser Permanente’s Total Health Assessment Questionnaire for Medicare Members
- IOM (Institute of Medicine) Recommended Social and Behavioral Domains and Measures for Electronic Health Records
- NACHC (National Association of Community Health Centers) Protocol for Responding to and Assessing Patient’s Assets, Risks and Experiences (PRAPARE) Assessment Tool
- WellRx Toolkit
- Kaiser Permanente's Your Current Life Situation Survey

Many of these tools, including those targeted for the Medicare population, cover social risk factors such as housing and food insecurity, transportation, interpersonal violence, and social support and align with many of the factors included in the National Academy of Sciences, Engineering, and Medicine (NASEM) social risk framework (see Chapter 2). Some also screen for whether patients need immediate or urgent assistance. Some have been widely used in specific programs or settings, including the PRAPARE tool developed for community health centers, the Accountable Health Communities Health-Related Social Needs Screening Tool used in the Center for Medicare & Medicaid Innovation’s (CMMI’s) Accountable Health Communities model, and the Health Leads Social Needs Screening Toolkit used by some accountable care organizations. Each of these three tools is summarized below, with Table 12.1 summarizing and comparing the types of social risk factors they collect. Details of the validated questions are further described in the screening tools’ documentation.

Table 12.1. Social Risk Factors Collected in Select Screening Tools

Social Risk Factor		Screening Tool	
	PRAPARE	Health Leads	Accountable Health Communities
Food Insecurity	✓	✓	✓
Housing Insecurity	✓	✓	✓
Utility Needs		✓	✓
Financial Resources Strain		✓	✓
Transportation		✓	
Exposure to Violence		✓	✓
Childcare		✓	
Education/Health Literacy		✓	
Employment		✓	✓
Social Isolation		✓	✓
Family & Community Support			✓
Education			✓
Physical Activity			✓
Languages Spoken			

1. PRAPARE

The Protocol for Responding to and Assessing Consumers' Assets, Risks, and Experiences (PRAPARE) screening tool, developed by the National Association of Community Health Centers (NACHC) and based on stakeholder input, has been widely adopted by community health centers, health systems, health plans, and other providers across the country.[8] This broad adoption has been facilitated by NACHC implementing and licensing the tool with multiple EHR vendors and being fully encoded in LOINC (Logical Observation Identifiers Names and Codes).[9] The screening tool includes questions about food insecurity, housing insecurity, transportation, and domestic violence, and some of the questions have been adapted for use by the Centers for Medicare & Medicaid Services (CMS) in the Accountable Health Communities model.[10]

2. Health Leads

In 2016, the Boston-based nonprofit organization Health Leads launched a social needs screening toolkit, updating it in 2018 to include optional questions based on stakeholder feedback.[11] The toolkit covers the following social needs domains: food insecurity, housing insecurity, utility needs, financial resources strain, transportation challenges, exposure to violence, and sociodemographic information such as race/ethnicity, educational attainment, family income level, and languages spoken. Optional domains include: childcare, detailed education information, employment, health behaviors, social isolation and supports, and behavioral/mental health. The toolkit includes information on whether each question has been validated, as well as its reading level and its precision—that is, whether it is broad or focused. Health Leads allows users to share and modify the licensed toolkit so long as it is attributed to the organization.

3. Accountable Health Communities Health-Related Social Needs Screening Tool

To support its Accountable Health Communities model, which addresses the gap between clinical care and community services by systemically identifying and addressing health care related social needs of Medicare and Medicaid beneficiaries, CMS developed a brief ten-item Health-Related Social Needs Screening Tool. This tool identifies patient needs in five different domains that can be addressed through community services: housing instability, food insecurity, transportation difficulties, utility assistance needs, and interpersonal safety.[10] Entities participating in the Accountable Health Communities model are required to use this screening tool to identify and refer patients to relevant social services.

D. Data Sharing and Interoperability to Address Social Risk Factors

Once data are collected in a standardized way, in order to address beneficiaries' social risks, data still need to be shared within the health care system and with social service providers. Commenters to the ASPE RFI noted the importance of data sharing and tracking referrals, but also raised concerns about data privacy requirements and protections. Several studies also underline the need to coordinate social and medical services, with data shared efficiently between interoperable platforms to share data efficiently and individual needs matched to appropriate care.[12,13] Scalability and interoperability problems exist, though some communities have addressed these issues.[5] The Administration for Community Living (ACL) has engaged community based organizations (CBOs) and CBO networks in developing strategies and tools to invest in health information technology systems that collect, manage and analyze data while enhancing program quality, client satisfaction and service reimbursement. Additionally, a network of health centers has developed a dashboard using information collected and integrated via EHRs for population health management, closing the loop on referrals.[14,15] Some states are also making headway in integrating and leveraging social risk data. Minnesota's Medicaid program, for example, has created a social risk database by extracting data from claims, EHRs, state and federal databases, and patient self-reported instruments, including the PRAPARE tool. The Oregon Food Bank provides an EHR-compatible list of the food and nutrition education resources available in every county.[3]

Standardized data on beneficiary characteristics, diagnoses, and procedures allow transfer of clinical (and potentially social risk) information across providers and payers to support clinical care, payment, and documentation. Standardized diagnosis and coding terminologies include both billing codes—ICD-10 diagnosis codes or Healthcare Common Procedure Coding System (HCPCS) codes—as well as SNOMED CT (Systematized Nomenclature of Medicine—Clinical Terms) or LOINC codes linked to EHRs. The ICD-10 classification system is the most comprehensive coding system used in assigning diagnostic and procedure codes associated with hospital inpatient, hospital outpatient, and physician office services in the Medicare program. HCPCS codes, managed by CMS, are used to demonstrate compliance with quality metrics or participation in demonstration projects. SNOMED CT is embedded within the EHR and requires further mapping to ICD-10 codes for health plans to use for data analytics. LOINC codes are primarily for clinical use and laboratory tests but are not linked to physicians' problem lists, diagnoses, or care plans.

Within the Department, some data sharing and data linkage activities are already underway. For this Report, American Community Survey (ACS) responses from the Census Bureau are being linked to Medicare claims, and results from this analysis will be included in an addendum to this Report once they are available. Efforts are also being made to link federal household survey data with hospitalization and vital records at the state level in Washington, Massachusetts, and Vermont. The Administration for Children and Families (ACF) has also developed a toolkit to clarify confidentiality rules in an attempt to limit impediments to data sharing and to help address social risk factors.[16]

Additionally, ASPE coordinates a portfolio intradepartmental projects that build data capacity for conducting patient-centered outcomes research (PCOR), and some of these projects focus on social risk factors. One such project is the Centers for Disease Control and Prevention's (CDC) linkage of the National Hospital Care Survey (NHCS) to Medicare claims and federal housing assistance program data collected by the U.S. Department of Housing and Urban Development (HUD), which will allow researchers to evaluate health outcomes for NHCS respondents who receive federal housing assistance.[17] Another is the creation of a consolidated set of national standardized databases on valid and reliable small-area social risk factors from the Agency for Healthcare Research and Quality (AHRQ).[18]

1. Standardized Terminology for Social Risk

There is an opportunity to document social needs in a standardized format using ICD-10 z-codes for social risk factors. The Z55-Z65 codes cover potential health hazards related to socioeconomic and psychosocial circumstances (see Table 12.2). However, some social needs do not have existing codes. For example, the PRAPARE screening tool has been mapped to z-codes, but not all screening response categories have a corresponding z-code.[19] On the other hand, the PRAPARE tool has been fully mapped to LOINC codes.[9]

Table 12.2. ICD-10 Social Risk Z-Codes

ICD-10 Code Category	Problems/Risk Factors Included in Category
Z55 – Problems related to education and literacy	Illiteracy, schooling unavailable, underachievement in a school, educational maladjustment, and discord with teachers and classmates
Z56 – Problems related to employment and unemployment	Unemployment, change of job, threat of job loss, stressful work schedule, discord with boss and workmates, uncongenial work environment, sexual harassment on the job, and military deployment status
Z57 – Occupational exposure to risk factors	Occupational exposure to noise, radiation, dust, environmental tobacco smoke, toxic agents in agriculture, toxic agents in other industries, extreme temperature, and vibration
Z59 – Problems related to housing and economic circumstances	Homelessness; inadequate housing; discord with neighbors, lodgers and landlord; problems related to living in residential institutions; lack of adequate food and safe drinking water; extreme poverty; low income; insufficient social insurance; and welfare support

ICD-10 Code Category	Problems/Risk Factors Included in Category
Z60 – Problems related to social environment	Adjustment to life-cycle transitions, living alone, acculturation difficulty, social exclusion and rejection, target of adverse discrimination, and persecution
Z62 – Problems related to upbringing	Inadequate parental supervision and control, parental overprotection, upbringing away from parents, child in welfare custody, institutional upbringing, hostility towards and scapegoating of child, inappropriate excessive parental pressure, personal history of abuse in childhood, personal history of neglect in childhood
Z62.819 Personal history of unspecified abuse in childhood	Parent-child conflict and sibling rivalry
Z63 – Other problems related to primary support group, including family circumstances	Absence of family member, disappearance and death of family member, disruption of family by separation and divorce, dependent relative needing care at home, stressful life events affecting family and household, stress on family due to return of family member from military deployment, alcoholism and drug addiction in family
Z64 – Problems related to certain psychosocial circumstances	Unwanted pregnancy, multiparity, and discord with counselors
Z65 – Problems related to other psychosocial circumstances	Conviction in civil and criminal proceedings without imprisonment, imprisonment and other incarceration, release from prison, other legal circumstances, victim of crime and terrorism, and exposure to disaster, war and other hostilities.

The submitted responses to ASPE's RFI indicate that insurers, state agencies and providers are beginning to use these z-codes to document social risk factors. Standardized social risk codes have the potential to facilitate transfer of information between providers, insurers, and community or social service providers, especially through EHRs. These diagnosis codes can support both clinical care and reimbursement, as already evidenced in some states. In Massachusetts, for example, z-codes for homelessness are currently included in risk-adjusted Medicaid payments.[15] Additionally, Pennsylvania's Department of Behavioral Health and Intellectual Disability Services requires documentation of social risk factors using ICD-10 z-codes as additional descriptors in the secondary diagnosis fields.[20]

The CMS's Office of Minority Health has been evaluating providers' ICD-10 z-code use. Initial results suggest that submission has been slow, in part because there is no payment for documenting social risk. Furthermore, ICD-10 guidelines previously required physicians to document z-codes, even though social risk factors are routinely assessed by non-physician providers such as case workers and discharge planners. This guidance has been revised, and starting in February 2018 non-physician providers can also document social risk factors but most physicians, case managers, discharge planners, social workers, nurses, and medical coders may not be aware of these changes, which could limit the uptake of z-codes.19.[21]

In March 2019, two proposals to expand social risk ICD-10 z-codes were submitted to the ICD-10 Coordination and Maintenance Committee managed by the National Center for Health Statistics. One, from the American Medical Association and UnitedHealthcare, requested more granular codes (a total of 23 new codes) to document more detailed information about specific issues for each social risk factor, such as level of education attained or the type of resource with which a low-income person is having trouble (prescriptions, medical care, transportation, utilities, child care, clothing, or phone).[22] These codes were identified based on a data model developed by UnitedHealthcare, to support data analytics by standardizing capture of social risk. Another proposal from Blue Cross Blue Shield of Vermont and the Yale School of Nursing addresses food insecurity (code Z59.4, lack of adequate food and drinking water). This team also proposes more granular codes to separately capture lack of food, food insecurity, lack of safe drinking water, and non-compliance with a prescribed dietary regimen due to financial hardship.[22] The proposed new codes would represent the social and economic conditions in the definition of food insecurity used by the USDA.[23]

Such proposals intend to capture social needs and to document referrals to social service providers. Submitted responses to the RFI include the belief that more detail would improve both care planning and coordination of services. In its submission to the ICD-10 committee, UnitedHealthcare indicated a preference for ICD-10 z-codes over other standardized coding terminologies (such as SNOMED CT or LOINC) for capturing social risk factors.[24] If approved, the earliest these codes could be used is 2020.

The interest in and use of ICD-10 z-codes is expected to grow. With the Bipartisan Budget Act of 2018 allowing Medicare Advantage (MA) plans to include supplemental benefits that are not primarily health-related for chronically ill beneficiaries, MA plans will likely want to document patients’ social risk factors as well as the plan’s referral or provision of services to determine return on investment. Currently, CMS only requires plans to submit information on broad types of supplemental benefits they will offer to enrollees in their annual bids. This will be an important area to monitor over time. As MA plans gain experience with these supplemental benefits, they may be able to evaluate the relative effectiveness of interventions and the data needed to support them.

2. Efforts to Standardize Social Risk Data Elements for Electronic Exchange

Efforts are also underway to record social risk information in EHRs to facilitate data sharing between providers and across settings. This information may come from a variety of sources, such as a patient portal, case manager, or health risk assessment, and then be linked to or entered into the EHR. Since these efforts are still in their infancy, ASPE commissioned a study to interview EHR vendors about social risk data collection.[25]

Overall, the key informant interviews identified a wide variety of social-needs screening tools available. There was no consensus yet around specific social risk factors to capture or which screening tools to use. Vendors may be incorporating multiple tools into EHRs to meet different client needs.

These findings suggest there is a need to:

- Standardize and develop consensus around social risk data elements for routine collection
- Standardize codes/value sets to support interoperable electronic exchange

To facilitate interoperable exchange of information on social risk factors, the Social Interventions Research and Evaluation Network (SIREN) has started a national public collaborative project called Gravity to develop use cases for three social risk factors: food security, housing stability and quality, and transportation access.[26] The goal of the Gravity project, funded in part by the Robert Wood Johnson Foundation, is to develop use cases for screening, diagnosis, treatment, and population health management activities within EHRs and related systems and to develop a consensus-based set of recommendations on how best to capture and group common data elements and associated value sets for electronic health exchange.[27] This project is intended to culminate in the creation of HL7 (Health Level Seven International) Fast Health Interoperability Resource (FHIR®) Implementation Guide. To date SIREN has identified over 60 vendors with social risk capabilities, including EHR vendors.

E. PAC Assessment Tools

There are also efforts to collect social risk information in post-acute care (PAC) settings. Medicare PAC providers routinely conduct patient assessments that include demographics, functional health, clinical care received, and availability of a caregiver at home. Beginning in 2020, PAC payment rules for long-term acute care, skilled nursing facilities, inpatient rehabilitation facilities, and home health agencies will include the social risk factors of race and ethnicity, preferred spoken language, health literacy, transportation, and social isolation. As an example, the existing and new social risk factors collected in skilled nursing facilities are shown in Table 12.3.[28] These factors were chosen due to their relevance for beneficiaries receiving PAC in these settings and the ability of PAC providers to address them. These assessment items are also mapped to LOINC and NOMED codes to enable EHR integration and data sharing. The PAC assessment items are catalogued in the CMS Data Element Library, where they have also been cross-walked with the associated health information national standards as applicable.[29]

Table 12.3. Skilled Nursing Facility Social Risk Assessment Items

Assessment Item	Existing Item	New Item
Race/Ethnicity		✓
Age	✓	
Gender	✓	
Marital Status	✓	
Lives Alone	✓	
Preferred Spoken Language		✓
Health Literacy		✓
Transportation		✓
Social Isolation		✓

II. Using Social Risk in Quality Measurement and Payment

Social risk can be used to adjust payments to account for differences in services provided based on patient needs. Such adjustments might be valuable, for example, for chronic-care management services, which are paid for by Medicare in addition to office visits and which include ordering and coordinating community and social services for beneficiaries with multiple chronic conditions.[30] Alternatively, patients' social needs can be incorporated into risk-adjustment models to determine base payments to providers and plans, as some states currently do. Finally, social risk data can be used in quality measurement, either for stratified reporting by patient subgroup, or for risk adjusting measures that are used to determine performance-based incentive payments. This section explores current initiatives that incorporate social risk data into quality measurement, VBP program incentive payments, or base payments to providers and plans.

A. NQF's Social Risk Trial Period and Roadmap to Promote Health Equity

As the consensus-based entity for endorsing and maintaining quality measures used in quality reporting and VBP programs for accountability purposes, the National Quality Forum (NQF) plays an important role in signaling to stakeholders the importance of measuring health care disparities to improve health care equity. NQF sets policies on how measure developers should risk adjust measures and obtains multi-stakeholder input on measures as part of the endorsement process.

From 2015-2017 the NQF engaged in a social risk trial period to address whether social risk factors could and should be accounted for in quality measures. During this period, measure developers could temporarily include social risk factors in a measure's risk adjustment, a practice that NQF's prior policy had prohibited. The final report concluded that adjusting measures for social risk is feasible, and included social risk factors such as a person's level of education into 17 endorsed quality measures.[31] The trial also led to the development of NQF's health equity road map, described later.

The most common social risk factors examined in the trial were race/ethnicity and payer (i.e., Medicaid). However, the NQF Risk Adjustment and Disparities panels recommended not considering race/ethnicity a proxy for social risk. The NQF report also noted that most measures that adjust for social risk factors were brought forward by private sector developers. Stakeholders raised concerns that the measures used in federal quality reporting and VBP programs do not adjust for social risk factors.

The initial trial illuminated many of the methodological issues of including social risk factors in measure risk adjustment or stratified reporting. It found that the impact of social risk factors varied by measure and that data limitations may have affected measure developers' ability to fully assess social risk factors in their measures. Measures with a strong conceptual basis for adjustment did not always demonstrate an empirical relationship between the relevant variables and performance. Empirical risk adjustment analyses demonstrated a very limited effect of social risk factors, consistent with ASPE's findings in Studies A and B. There was also inconsistency in how measure developers calculated and presented measures stratified by social risk factors for identifying health care disparities. The final report concluded that data on social risk factors should be as granular as possible to ensure sensitivity and accuracy.

To address these unresolved methodological questions prior to a permanent policy change, NQF is extending the trial period for another three years, ending in 2021. All measures submitted for NQF endorsement during this period are part of the Social Risk Trial. As part of this extended trial, NQF is collecting additional information from measure developers to review risk-adjustment models. NQF will examine how the model was developed and the risk factors considered. In addition, NQF has convened a new Scientific Methods Panel to provide guidance on the appropriateness of the risk-adjustment methods used by a measure developer. The NQF Disparities Standing Committee will provide oversight of the trial to ensure proposed social risk adjustment will not worsen health care disparities. The findings of the extended trial will determine whether NQF will continue to allow measure developers to consider social risk adjustment in outcome measures.

NQF also launched a roadmap to promote health equity and reduce health disparities.[32] This roadmap lays out four actions:

1. Prioritizing measures that can help to identify and monitor disparities
2. Implementing evidence-based interventions to reduce disparities
3. Investing in the development and use of measures to assess interventions that reduce disparities
4. Providing incentives to reduce disparities.

The roadmap recommends additional payment for patients with social risk factors, as well as developing the infrastructure to provide high-quality care for people with social risk factors.

B. Accounting for Social Risk in Medicare's VBP Programs

The use of social risk data in VBP programs was highlighted in the introductory and social risk chapters, so it is only briefly reviewed here. In addition to these national efforts to address health equity and reduce health disparities, Congress recently mandated that penalties in the Hospital Readmissions Reduction Program (HRRP) be stratified by a hospital's share of dually enrolled beneficiaries.[33] Recent studies estimating the impact of the new stratified methodology suggest that by using this approach penalties are reduced for hospitals with the highest proportion of dually enrolled beneficiaries.[34,35] This approach has not been mandated by Congress for other Medicare VBP programs, although CMS has included a Categorical Adjustment Index in the MA and Prescription Drug Plan program and a complexity adjustment in the Merit-based Incentive Payment System based on dual enrollment and HCC (hierarchical condition category) risk scores. The question of whether adjusting for social risk in VBP programs is appropriate will be evaluated in greater depth in the policy analysis chapter (Chapter 14).

C. Accounting for Social Risk in Payments to Health Plans and Health Care Providers

In addition to accounting for social risk in Medicare's VBP programs, social risk data are currently being used to case-mix adjust some payments. Medicaid capitated payments to health plans in Massachusetts and Pennsylvania, for example, are adjusted this way, as described earlier in this chapter. Some observers have suggested this practice could lay the foundation for incorporating social risk into VBP programs. Requiring a standardized screening tool by plans within states could allow social risk data to be incorporated into risk adjustment of payments, as well as facilitate evaluation of interventions addressing social needs.[36]

Several state Medicaid agencies are also including requirements for Medicaid managed care organizations to assess and directly address patients' social needs. In turn, health plans are paying providers for screening and referring patients to social service providers to address social needs. In 2019, 35 of 39 states with Medicaid managed care contracts required managed care organizations to screen for members' social needs and permitted plans to coordinate needed social services. State Medicaid programs are also using Section 1115 demonstration waivers to encourage or require Medicaid plans to address social needs. For example, Oregon's Medicaid program has created 16 coordinated care organizations (CCO), which are community-based partnerships of managed care plans and providers. CCOs are given a global budget to manage the health of enrollees, which can be spent on physical and mental health services, as well as non-health ("health-related") services, such as short-term housing or home improvements.[37]

III. Measuring Health Equity

In addition to providers' efforts to collect data on patients' social risk to support and coordinate social services, there is increasing interest in health equity measures to reduce health disparities, including reporting measures that are stratified by social risk to identify disparities, monitor disparities over time, and evaluate the impact of interventions. CMS, for example, has started to measure health equity in various ways, such as confidential hospital reports of the pneumonia readmission measure stratified by dual-enrollment status, as well as stratified reports by race/ethnicity in the CMS Hospital Performance Chartbook.[38,39] CMS's Office of Minority Health also has posted disparities in performance among MA plans by race/ethnicity and gender and has developed an interactive tool, Mapping Medicare Disparities, using an equity summary score that can be stratified by race/ethnicity, dual-enrollment status, age, or gender.[40,41] These efforts are guided by CMS's Health Equity Plan for Improving Quality in Medicare, which provides a framework for providers to measure, identify, and target disparities in care and outcomes for quality improvement.[42]

Other agencies within the Department also assess health equity. The Agency for Healthcare Research and Quality (AHRQ) produces an annual National Healthcare Quality and Disparities Report, presenting trends for measures related to access to care, affordable care, care coordination, effective treatment, healthy living, patient safety, and person-centered care. The AHRQ report presents, in chart form, the latest available findings on quality of and access to health care, as well as disparities related to race and ethnicity, income, and other social risk factors.[43] The Health Resources & Services Administration also produces an annual Health Equity Report including trends in health disparities and improvements in health equity for many program areas, including maternal and child health, primary health care access and quality, health care systems, HIV/AIDS, mental and behavioral health, chronic disease prevention and health promotion, health workforce, and rural-urban and geographic disparities.[44] At the state level, Medicaid programs are also being incentivized or required to identify and address health equity. For example, Medicaid managed care plans in the District of Columbia must identify health disparities across subpopulations and develop a timeline to implement targeted interventions to remediate these disparities.[37]

IV. Summary

In summary, there are a growing number of national and state efforts to identify and address the needs of patients with social risk factors, measure health care disparities and equity, and determine payments and incentives to address disparities. However, there is variation in social risk data collection and use including:

- A lack of consistency in how and what social risk data are collected
- Variation in whether and how quality and resource use measures account for social risk
- Differences in whether and how social risk is used to adjust payments
- Varying methodologies to evaluate disparities and equity

V. Key Findings

1. Many providers, health plans, and social service providers are collecting social risk information, but not in a consistent way.

There is growing interest in collecting data on social risk factors, particularly information that can be used to address patients' social needs. Several efforts are underway to collect more granular data on patients' social needs, including the proposals mentioned in this chapter to modify ICD-10 z-codes and social risk screening tools that are being implemented in different parts of the health system.

There is also recognition of the need for these data to be consistent across federal, state, and local programs. Stakeholders submitting comments to ASPE's RFI and EHR vendors included in the case studies expressed the desire for a consistent set of social risk factors and terminologies. This would likely require either a screening instrument or supporting crosswalks from screening instruments to social risk codes.

Efforts are currently seeking consensus on what social risk data needs to be collected, but these are typically private efforts with many groups working in the same area. As these efforts mature, it may be useful and appropriate for the Department to set data collection criteria for social risk factors.

2. Various elements of social risk data are being collected by different government organizations (federal, state, and local government), but these elements are not shared across organizations.

Many respondents to ASPE's RFI observed that the federal government collects individual social risk information across a number of Departments. CMS, through HHS, collects beneficiary race and dual-enrollment status; the Department of Agriculture (USDA) collects supplemental nutrition assistance program (SNAP) enrollment information; the Department of Housing and Urban Development (HUD) collects housing support information; and the Census Bureau, through the Department of Commerce, collects area-level social risk information. State and local health and social service programs collect additional social risk information. These data are not always shared across government organizations or with health providers and plans.

Facilitating data sharing across the organizations already collecting data may reduce the amount of additional data collection needed to identify socially at-risk beneficiaries. Moreover, the finding that data are not often shared between the health system and community partners demonstrates a need for an interoperable system to ensure partners in health work together efficiently to achieve the best outcomes for all beneficiaries.

3. **Work has begun to measure and report quality for beneficiaries with social risk factors, but more is needed to improve and coordinate efforts.**

Efforts to improve health equity are beginning through NQF and CMS laying the foundation for health equity and health disparities measures to inform where improvements are needed. Both groups have begun to develop measures stratified by social risk and health-equity measures. These activities will inform the development of evidence-based interventions so that providers can address disparities. However, at present many different methodologies are still being used to measure and track health disparities and health equity. NQF and other entities recognize that the need to refine and standardize these methodologies to support accountability and the management of population health by tracking disparities. They also recognize inconsistencies in the way measure developers evaluate whether quality and resource-use measures should adjust for social risk, such as the use of statistical or conceptual criteria. NQF is continuing its social risk trial to address these methodological issues and determine whether to permanently allow social risk adjustment.

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Chapter 13. Best Practices for Addressing Social Risk in the Health Care System

The earlier analytic chapters in this Report evaluate the role of social risk in the quality and resource use measures included in Medicare's value-based purchasing (VBP) programs. Although these quantitative analyses can assess which currently collected social risk factors are associated with measure outcomes, more information is needed to understand how to improve care for socially at-risk beneficiaries. The strategies and considerations in Study A recognized that improving outcomes for socially at-risk beneficiaries cannot be accomplished through changes to quality measures and VBP programs alone. Truly improving care for vulnerable populations also requires addressing underlying social risk factors. That is why this Report includes the progress made on the considerations from Study A to "consider using existing or new quality improvement programs to provide targeted support and technical assistance to providers[a] that serve beneficiaries with social risk factors" and "consider developing demonstrations or models focusing on care innovations that may help achieve better outcomes for beneficiaries with social risk factors," as well as determine what remains to be done to provide high-quality care to socially at-risk beneficiaries.

I. Best Practices in Providing Care to Socially At-Risk Beneficiaries

Recently, several efforts have been made to describe effective strategies for addressing social risk in the health system. Like the conceptual models of social risk presented in the introductory chapter of this Report, these frameworks are complementary to current methods of analysis, rather than alternatives.

Three such frameworks are presented below, all of which have common elements. Each framework recognizes the importance of assessing beneficiary social risk as a first step, as discussed in more detail in the previous chapter. Additionally, all the frameworks emphasize coordinating care within the health care system to address medical risk. Finally, they all include partnerships with social service providers and the community to address social needs.

A. Systems Practices for the Care of Socially At-Risk Populations

The Office of the Assistant Secretary for Planning and Evaluation (ASPE) asked the National Academies of Science, Engineering, and Medicine (NASEM) to identify best practices of high-performing hospitals, health plans, and other providers that serve disproportionately higher shares of socioeconomically disadvantaged populations, and to compare those best practices to practices of low-performing providers serving similar patient populations. The NASEM determined that six practices showed promise for achieving high levels of performance for beneficiaries with social risk factors (Figure 13.1)[1]

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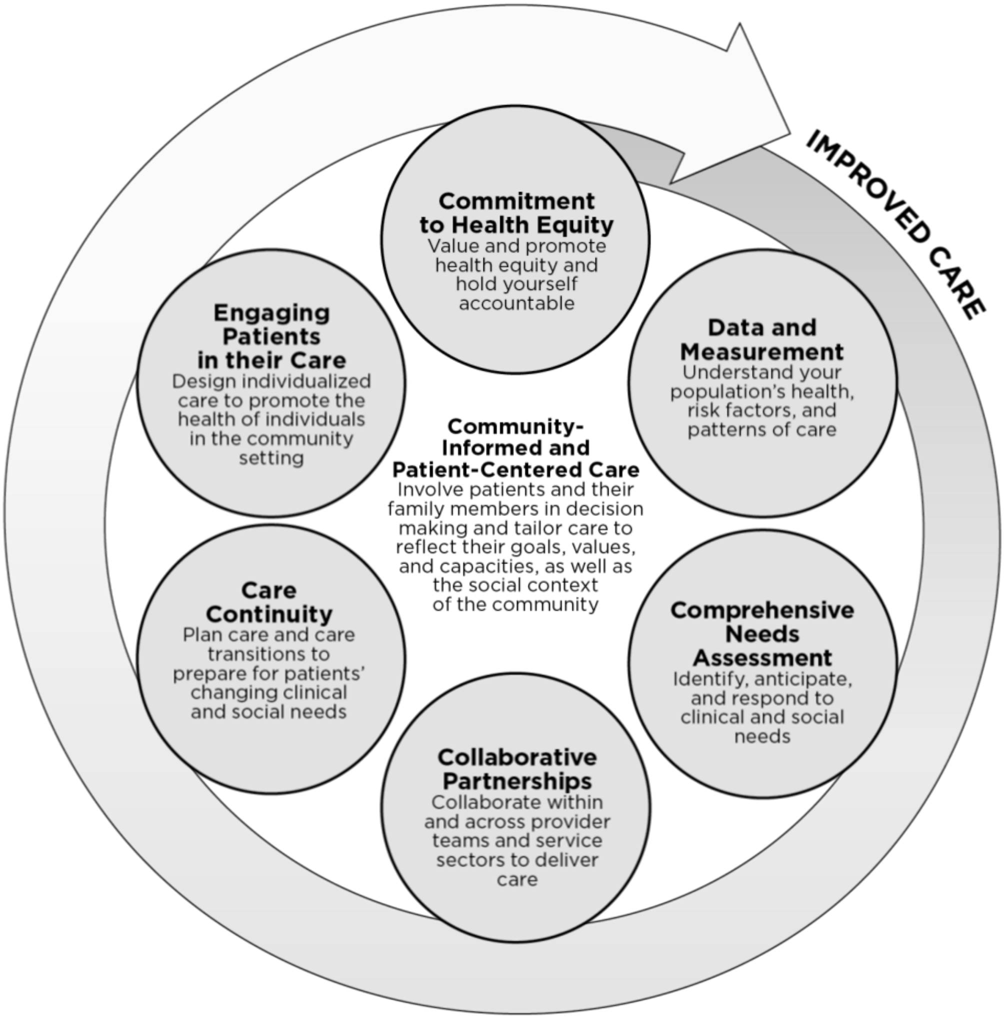
[a] Note that in this Report the term "providers" is used to indicate physicians, hospitals, dialysis facilities, nursing facilities, Medicare Advantage contracts, etc.

Figure 13.1. Systems Practices for the Care of Socially At-Risk Populations

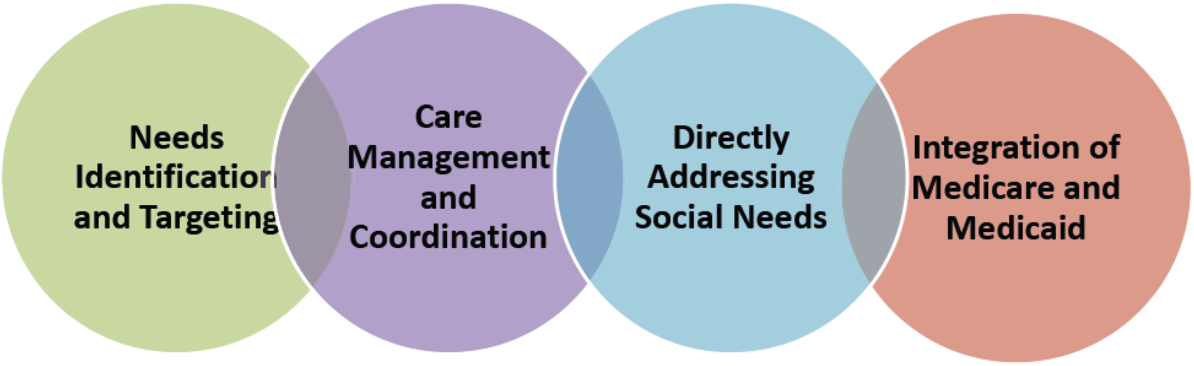


Source: National Academies of Sciences, Engineering, and Medicine. Systems Practices for the Care of Socially At-Risk Populations. Washington, DC: The National Academies Press; 2016. https://www.nap.edu/catalog/21914/systems-practices-for-the-care-of-socially-at-risk-populations.

B. Strategies Used by Medicare Advantage Plans

ASPE also contracted with the RAND Corporation to conduct interviews and case studies with MA plans that had high proportions of dually enrolled beneficiaries and high quality scores to understand how these plans addressed the social and health needs of dually enrolled beneficiaries.[2,3] RAND found that high-performing, high-dual, and special needs plans (SNPs) implemented multipronged approaches and strategies to address these needs. From their findings, they developed a taxonomy for MA plans addressing social needs that includes strategies and interventions focusing on four areas: 1) identifying and targeting social needs, 2) managing and coordinating care, 3) directly addressing social needs, and 4) integrating Medicare and Medicaid (Figure 13.2).

Figure 13.2. Strategies Used by Medicare Plans to Improve Care for Dually Enrolled and Other High-Cost, High-Need Beneficiaries



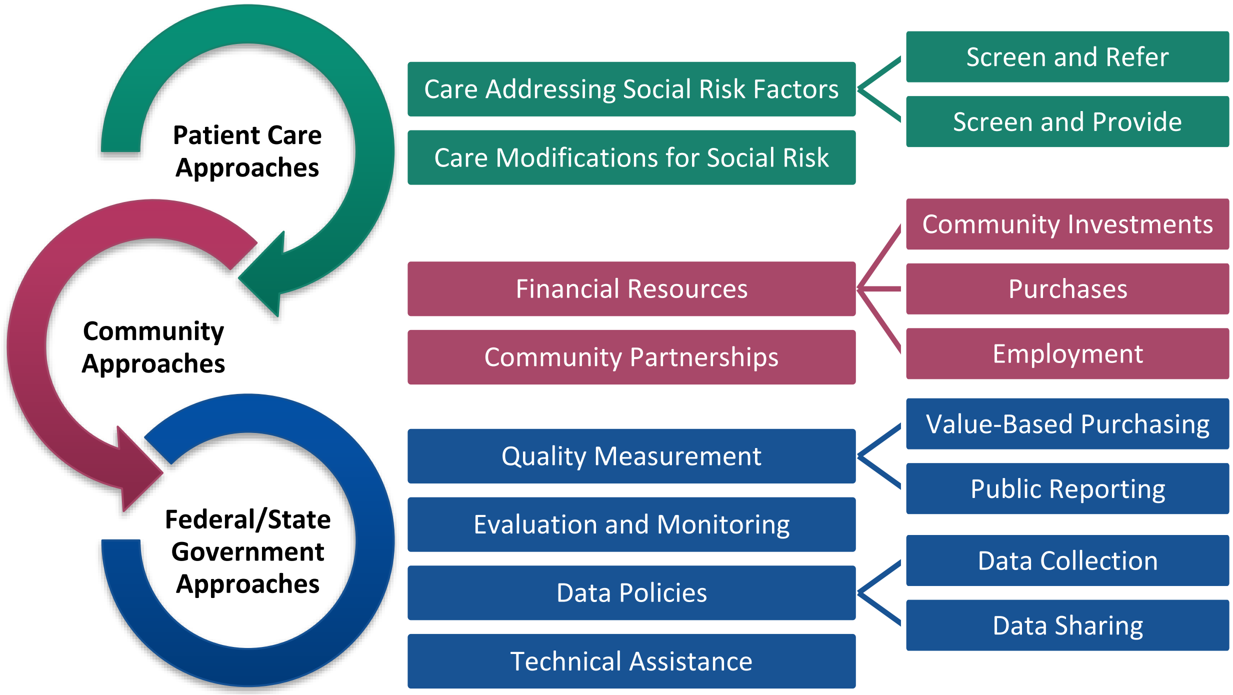
Examples			
Health risk assessment, predictive modeling to identify high-risk beneficiaries	Multidisciplinary care teams, individualized care plans	Referral for or provision of transportation, housing, etc.	Integrating and aligning Medicare and Medicaid administrative processes and benefits

Source: Sorbero ME, Lovejoy SL, Kandrack R, Taylor EA, Bouskill KE. Types and Costs of Services for Dual Beneficiaries by Medicare Advantage Health Plans. Santa Monica, CA;2018. https://www.rand.org/pubs/research_reports/RR2213.html.

C. Strategies for Health Care to Invest in Social Risk

A recent article in the Journal of Healthcare Management divided strategies for addressing social risk by whether the actions are at the patient or community level.[4] Additional strategies can be implemented at the federal or state government level. Strategies implemented at the patient level, referred to as patient care strategies, include modifying clinical care to account for social needs (such as choosing a medication that does not need to be taken with a meal for food-insecure patients), and screening and addressing social needs either with services provided in the health care system or referrals to social service providers. Strategies at the community level, called community health strategies, include leveraging the health care system's role as anchor institutions in the community. The health care system invests financial resources in the community as employers, purchasers, and investors. The other community health strategy is to create community partnerships that combine resources both inside and outside the local health care system to implement community-wide interventions. Finally, federal and state government strategies include quality measurement, evaluation, and monitoring though value-based purchasing and public reporting. Government entities may also collect data and provide technical assistance to communities and providers.

Figure 13.3. Approaches for Health Care Systems to Invest in Addressing Social Risk



Adapted from: Gottlieb L, Fichtenberg C, Alderwick H, Adler N. Social Determinants of Health: What's a Healthcare System to Do? Journal of Healthcare Management 2019;64:243-57. doi:10.1097/jhm-d-18-00160.

At the community level, there is growing recognition that the health care delivery system must draw upon social and community services to address social risk factors.[4,5] These services most often are provided by networks of non-profit community-based organizations that have long-standing, trusted relationships across the nation, in both rural and urban communities. As known entities and providers to the people they serve, these networks already have access into people's homes, and they often serve as first responders when social crises develop. Collaboration between health care organizations and social service networks in the community have been associated with higher performance and reduced health care costs.[6-9] Strategic collaboration between health and social service sectors can bring together the different expertise found in these sectors, allow innovation to be replicated and scaled, and enable efficient investment in technology that can integrate workflows.

II. Current Efforts to Address Beneficiaries' Social Risk

Many existing programs are now using the frameworks presented above to address social risk. Some of these efforts are within the Department of Health and Human Services, while some come from other parts of the federal government, from states, and from the private sector.

A. Current Efforts in the Department of Health and Human Services

Agencies throughout the Department of Health and Human Services are actively addressing social risk and sharing best practices. Some illustrative examples are described below.

1. Models in CMS's Center for Medicare & Medicaid Innovation

The Center for Medicare and Medicaid Innovation (CMMI) in the Centers for Medicare & Medicaid Services (CMS) supports the development and testing of innovative health care payment and service-delivery models. Over the past few years, CMMI has begun developing and testing models that address social risk.

The first of these is the Accountable Health Communities Model, which began in 2017 in 30 communities and will continue through 2022. The model encourages health-community collaboration through screening for health-related social needs and providing navigation services and referrals for social needs identified by screening.[10] Additionally, two models addressing the opioid crisis, the Integrated Care for Kids (InCK) Model and Maternal Opioid Misuse (MOM) Model ask participants to leverage community resources in addition to coordinating care within the health system.[11,12] Finally, the Medicare-Medicaid Financial Alignment Initiative integrates primary, acute, behavioral health and long-term services and supports for dually eligible individuals and better align the financing of the Medicare and Medicaid programs.[13]

The State Innovation Model (SIM) is an additional CMMI initiative that states have used to address social risk. The second round of SIM grants, awarded in 2014, required states to develop a Plan to Improve Population Health during the project period. All SIM states linked or planned to link primary care with community-based organizations and social services, and most explicitly addressed social risk factors (referred to in the third annual report as social determinants of health).[14]

2. HealthyPeople 2020

Healthy People 2020 highlights the importance of addressing social risk by including "Create social and physical environments that promote good health for all" as one of the four overarching goals for the decade. The Social Determinants of Health topic area within Healthy People 2020 is designed to identify ways to create social and physical environments that promote good health for all. This topic includes objectives for economic stability, education, health and health care, neighborhood and built environment, and social and community context.[15]

3. CDC's STRYVE: Striving to Reduce Youth Violence Everywhere

This national initiative from the Centers for Disease Control and Prevention (CDC) aims to prevent youth violence before it starts. The website provides training, research, and data on violence prevention, and interactive workspaces that communities can use to build a coalition of community partners and work together to prevent youth violence. STRYVE provides resources for communities to understand the complementary roles and approaches of different sectors, including education, law enforcement, and community planning, in addressing youth violence.[16]

4. CDC's Health Impact in 5 Years Initiative

The CDC's Health Impact in 5 Years (HI-5) initiative highlights non-clinical, community-wide approaches that have evidence reporting 1) positive health impacts, 2) results within five years, and 3) cost effectiveness and/or cost savings over the lifetime of the population or earlier. By focusing on social-risk and community approaches to make healthy choices easier, the programs intend to help improve the health of everyone living in a community.[17]

5. CDC's Racial and Ethnic Approaches to Community Health (REACH)

REACH is a national program administered by the CDC, aimed at reducing racial and ethnic disparities in health. REACH awardees bring together members of the community to establish community-based programs and culturally tailored interventions serving African Americans, American Indians, Hispanics/Latinos, Asian Americans, Alaska natives, and Pacific Islanders.[18]

6. CDC's 6|18 Initiative

The 6|18 Initiative connects healthcare purchasers, payers, and providers with CDC researchers, economists, and policy analysts to find ways to improve health and control costs with the 6|18 interventions.[19]

7. Office of the Surgeon General's Community Health and Economic Prosperity Initiative

The Community Health and Economic Prosperity Initiative's goal is to improve the health of all American and unleash more sustainable and equitable prosperity using a multipronged approach in increase awareness, provide tools and resources, and build support from and action by diverse stakeholders. The initiative will include a Surgeon General's Report, community convenings to explore critical topics affecting communities, and communications outreach to amplify messages and reach diverse stakeholders.[20]

8. ACF's Low Income Home Energy Assistance Program (LIHEAP)

The Low Income Home Energy Assistance Program (LIHEAP) provides federally funded assistance to low income households in managing costs associated with home energy bills, energy crises, and weatherization and energy-related minor home repair.[21]

9. AHRQ Visualization Resources of Community-Level Social Determinants of Health Challenge

This challenge provides funding to 12 organizations to develop data visualization tools to enhance the research and analysis of community-level health services. Participants must use publicly available and free SDOH data from multiple sources to develop visualization tools that can augment the insights drawn from the analysis of medical expenditure and health care utilization data at the community level.[22]

10. ACL's No Wrong Door Model

The no wrong door model allows anyone can be seamlessly connected to the full range of community-based options available. Through a network of agencies, No Wrong Door expands access to services and supports, helping individuals and their caregivers navigate resources they need with a person-centered approach. No wrong door grantees are increasingly skilled in person-centered planning facilitation, which, in turn, increases the likelihood that referrals are of importance to the person.[23]

B. Current Efforts in the Veterans Administration

As a holistic provider of both health and social services, the U.S. Department of Veterans Affairs (VA) has the opportunity to address both the health and social needs of veterans within the system. As an example, the VA has implemented a medical-home model targeted specifically at homeless veterans. This program has increased primary and social work visits for homeless veterans, while decreasing total costs and acute-care use.[24]

C. Current Efforts in the Private Sector

As discussed in Chapter 11, in the fall of 2018, ASPE issued a Request for Information (RFI) asking how services are targeted to Medicare beneficiaries with social risk factors and whether these services have been evaluated to determine the effectiveness. To supplement the information received from responses to the RFIs, ASPE also looked at external research evaluating interventions to address social risk. Findings from both the RFI comments and literature review are summarized below, generally and for several specific types of interventions. Submitted comments are available in full on ASPE's website.[a]

RFI Responses: The RFI comments included a wide variety of interventions, each targeting one or more social need. A few of the interventions mentioned used existing Medicare benefits, such as Program of All-Inclusive Care for the Elderly (PACE) participants that provide adult day care that addresses social isolation, food insecurity, and transportation.[b] MA plans can also offer supplemental benefits that address some social needs, such as providing adult day care that addresses transportation needs for beneficiaries with difficulties with activities of daily living (ADLs), and providing transportation to medical appointments and pharmacies.[c] However, most interventions discussed in the RFI comments go beyond existing Medicare benefits to address social needs.

The most common type of intervention mentioned was case management to address both medical and social needs. Such programs often rely on the case manager to identify social needs and then refer beneficiaries to community organizations to address those needs, the "screen and refer" approach discussed in the best practices section above. Alternatively, case managers may themselves help the beneficiary enroll in programs that address the social need. Many of these programs focus on insurance status, housing, food/nutrition, and integrated medical and behavioral health. Some case management programs incorporate legal and/or financial help or phone calls to counter social isolation. For example, one respondent described a health plan's community-based case managers, who are case workers and social workers based in the community and connect local members with social service providers.[d]

An important component of many interventions described in the submitted responses was strong partnerships with community organizations, also a strategy included in the best practices' frameworks. Some health care providers and plans that refer beneficiaries to community organizations to address the beneficiary's social needs maintain their own directory of local organizations, while others use a

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[a] https://aspe.hhs.gov/social-risk-factors-and-medicares-value-based-purchasing-programs-request-information

[b] See submissions from Miami Jewish Health, PACE Michigan, and PACE of Rhode Island

[c] See submission from Anthem

[d] See submission from Cigna

commercially available directory. Many commenters mentioned partnering with local social service providers such as senior centers, food banks, or housing support agencies to better address beneficiaries' social needs. With these partnerships, some respondents noted that they share information about beneficiaries' social risk to follow up on whether the beneficiary actually received services. For example, one described a platform for sharing case management information between health and social service providers, allowing providers to "close the loop" and know whether beneficiaries received social services.[a] Other health care providers mentioned that they work with organizations to improve the social services available in the community. One of these providers, for example, discussed participating in a community coalition that identifies and addresses community deficits through approaches such as developing guidelines for referrals to mental health services or applying for housing grants to increase the affordable housing in the community.[b]

Respondents noted that individuals' social risk information can be used to identify appropriate patients for targeted interventions. This process includes both identifying an individual's social needs and/or using algorithms to predict which patients are most likely to benefit from an intervention. Additionally, many organizations used area-level measures of social risk to focus interventions on specific neighborhoods.

Most of the interventions described in the submitted responses did not include an evaluation, and almost none evaluated the intervention's return on investment. Commenters noted that it can be difficult to evaluate interventions despite the clear need for evidence of effectiveness. Of those interventions that were evaluated, the most common outcomes assessed were total spending, emergency department (ED) use, and hospitalizations, and the evaluations generally found that addressing social risk factors had positive health outcomes. Coordinating care was shown to reduce total spending and hospitalizations, and integrating social services and health records reduced hospitalization and ED use. Providing housing to beneficiaries reduced total spending and hospital readmissions, while home visits reduced ED use, hospitalizations, and improved patients' diabetes management. Providing healthy meals reduced total spending, ED use, and hospitalizations. Addressing social isolation with phone calls, home visits, and community programming reduced ED and hospital use. Finally, providing transportation through ridesharing reduced transportation costs and had high patient satisfaction rates.

Specifics of the evaluation methods and findings can be seen in the comments submitted by the following organizations on ASPE's website:[c]

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[a] See submission from Parkland Health & Hospital System

[b] See submission from Mountain-Pacific Quality Health

[c] https://aspe.hhs.gov/social-risk-factors-and-medicares-value-based-purchasing-programs-request-information

- Adventist Health Policy Association
- American Board of Family Medicine
- America's Essential Hospitals
- Anthem
- Ascension
- Association for Community Affiliated Plans
- Benefits Data Trust
- Better Medicare Alliance
- Center for Health Care Strategies
- Commonwealth Care Alliance
- Healthfirst
- Humana
- Lyft
- Maxim Healthcare Services
- Medical Home Network
- Miami Jewish Health
- Michigan Medicine
- Molina Healthcare
- Mountain-Pacific Quality Health
- PACE of Rhode Island
- Parkland Health & Hospital System
- SCAN Health Plan
- Virginia Commonwealth University Health System
- WellCare Health Plan

Published Literature: Though commenters did not focus on evaluating programs, the published literature shows good outcomes for individual programs. For example, the Association of Community Affiliated Plans (ACAP) highlighted the critical role of care coordination and interdisciplinary care teams in improving management relationships in interventions as well of addressing social risk factors to prevent at-risk individuals from further medical or functional decline.[25] These goals are achieved through enhancing patient's discharge and transition planning and telehealth solutions. An additional evaluation will be available from North Carolina's Medicaid Section 1115 waiver demonstration, which will be implemented from 2019 through 2024. A component of the state's waiver, the Health Opportunities Pilots, will evaluate the impact of providing select evidence-based, non-medical interventions related to housing, food, transportation and interpersonal safety to high-needs Medicaid beneficiaries.[26]

1. Transportation

RFI Responses: Many comments described interventions specifically targeted to transportation needs. In terms of directly providing transportation services, some providers have vans that pick up beneficiaries from their homes and drive them to appointments, while others have partnered with ride sharing services to provide transportation to appointments, to homes after hospital discharge, to a pharmacy, or even to community centers to address social isolation. Most of the submitters that mentioned transportation services were MA plans that can offer these services as a supplemental benefit. However, one rideshare service has partnered with a safety-net hospital to provide rides home after hospital discharge and for outpatient appointments.[a] Other comments mentioned providing home visits or telehealth services to beneficiaries without access to transportation.

Published Literature: The published literature also focuses on providing transportation to medical appointments or pharmacies. Case studies have shown that patients and beneficiaries use mobile health clinics, additional transportation benefits, on-demand transportation, and volunteer ride services when

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[a] See submission from Lyft

they are available.[27] However, a randomized trial comparing ridesharing services to the non-emergency medical transportation offered to Medicaid patients in an urban area found that both groups had similar rates of missed appointments.[28]

2. Food Insecurity

RFI Responses: The comments indicated that many organizations are also implementing interventions that address food insecurity and/or nutrition. These interventions include nutrition assistance, on-site or mobile food pantries, and community gardens. Some MA plans offer meal delivery after acute health events.

Published Literature: In the area of food insecurity, research demonstrates that low-income individuals with chronic diseases who receive free meals specifically tailored to their medical needs are less likely to be admitted to the hospital. A 2019 JAMA study revealed that low-income patients who received meal deliveries had half as many inpatient admissions and an even larger reduction in skilled nursing facility (SNF) admissions than a similar population who did not receive these meals.[29]

3. Housing

RFI Responses: Although many comments mentioned the importance of addressing housing needs, fewer pointed to interventions to address them. The most common intervention mentioned was providing home safety assessments, either during a home visit or as a stand-alone service. A couple of organizations provide temporary housing or have purchased their own housing units for beneficiaries. For example, one submission described a health plan's recuperative-care program that provides temporary housing after hospital discharge for homeless beneficiaries.[a]

Published Literature: The intersection between housing and health is another well studied relationship; the literature indicates that many communities across the country have implemented housing programs to reduce associated high medical utilization costs.[30] One common model is "housing first," where addressing homelessness is prioritized over addressing other needs, such as health care. An example is Sacramento's Dignity Health, which provides temporary housing for individuals with disabilities who are experiencing chronic homelessness.[31] This housing is referred to as stabilization units and is funded through "community health benefit dollars" from local hospitals—a requirement that nonprofit hospitals provide community benefits in return for their tax exempt status. The program that utilized these stabilization units saw a reduction in emergency department (ED) use and total days spent in the hospital for their housed patients.[32]

In some circumstances, states can use Medicaid to fund housing-related services. Louisiana has leveraged this opportunity to create the Permanent Supportive Housing Program (PSH), which was established in 2005 through a partnership between the Department of Health and State Housing Authority. The state uses tax credits to incentivize the production of affordable housing units and as subsidies to make housing affordable for low-income residents. Medicaid managed care organizations must refer beneficiaries to the

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[a] See submission from Molina Healthcare

PSH when appropriate. Additionally, Medicaid pays for pre-tenancy services, such as completing a housing application, as well as move-in expenses and ongoing services, such as training on tenant's rights and responsibilities. The PSH program includes trained Tenancy Service Managers who engage tenants when services are refused or when Medicaid coverage is temporarily lost. Since 2008, the PSH has a 94% retention rate, with over half of households experiencing an increase in income after obtaining housing, and has significantly reduced Medicaid acute-care costs, hospitalizations, and emergency department use.[33]

Similarly, in a number of states, Centers for Independent Living and Area Agencies on Aging (AAA), funded under the Rehabilitation Act and the Older Americans Act, respectively, serve as transition coordinators and play crucial housing-related roles in state Money Follows the Person programs. These roles included employing housing coordinators, or partnerships with CILs, AAAs and Long-Term Care Ombudsman Programs.[34] In a number of states, State programs are coordinated with HUD 811 Project Rental Assistance to enhance transition outcomes and coordination with social service agencies.[35]

III. Challenges in Addressing Social Risk

The RFI also asked providers and health plans about challenges in addressing social risk within the health care setting. All respondents acknowledged the importance of addressing beneficiaries' social risk factors to improve health outcomes, but many mentioned the difficulties to doing so as well. Specifically, they mentioned challenges faced within the health care setting in coordinating health care and social services, as well as challenges for beneficiaries working to address their own social needs.

RFI Responses: Within the health care system, many comments noted that providing social services is not reimbursed in the same way as health services. Commenters noted that providing these services or coordinating with social service providers also requires up-front infrastructure investments. Some noted that increased or more consistent insurance coverage for non-medical services within transportation, housing, and nutrition could help ease financial worries, especially in vulnerable populations. Moreover, some providers felt that the limited amount of time they have with each patient forces them to prioritize direct health needs over social needs. Some organizations that are working to address social needs mentioned the training required to provide these services, both for providers and other beneficiary-facing staff.

In terms of working with social service providers, some comments addressed the challenges in establishing relationships and coordinating with community organizations. Organizational goals may differ between health care and social service providers. Beneficiaries' eligibility for specific programs may also differ between health and social service providers, and even between various social service programs. Many beneficiaries have multiple social needs that would ideally be addressed together, but navigating multiple programs can make this even more difficult. Commenters also said that sharing information between health and social service providers can be challenging, making it harder to follow up on whether a beneficiary has received services after they have been referred to a social service provider.

Helping individual beneficiaries address their social needs may also present challenges. Some patients may be reluctant to receive social services, or may have language barriers that make it more difficult to receive them. Some organizations also said that reaching and following up with beneficiaries with social risk factors may be challenging, particularly if their addresses or phone numbers change frequently. Addressing social needs can require family and/or caregiver support, and not all beneficiaries have access to this support, or their families may not be able to provide support due to their own needs. These challenges can be magnified for beneficiaries with multiple social risk factors.

IV. Lessons Learned

Below are key lessons learned by organizations that ASPE asked to comment on their experiences addressing social risk in the RFI, as well as lessons learned by examining the published literature on this topic.

RFI Responses: Among lessons learned about beneficiaries' social risk, commenters first noted the importance of screening for social risk to identify needs. Once needs have been identified, some organizations felt that they should be addressed at the same time or even before delivering health services, since medical and social risk are interrelated. Commenters also noted the need for flexibility in these efforts. They noted, for example, that addressing one social need may result in identifying additional needs that should be addressed even before the originally identified need. For beneficiaries reluctant to receive help with social needs, organizations find they must first build trust with these beneficiaries before they can work to address their social needs. To build this trust, many organizations rely on community health workers. These community health workers can also help an organization maintain up-to-date directories of local social service resources. Respondents also emphasized the importance of building relationships with social service providers, which may require understanding how social service providers do their work and how their processes differ from those of health service delivery.

Published Literature: A study examining collaborations between hospitals and social services in high- and low-performing communities in 16 hospital service areas (HSAs) across the United States uncovered three main findings, all of them consistent with the comments from RFI respondents emphasizing the need for collaboration and partnerships between community organizations.[36] First, both high- and low-performing communities were characterized by collaboration between health care and social services in the community; though in high-performing communities these organizations coordinated activities to achieve shared goals, while in low-performing communities there were communication between the organizations but no collective action. Second, in high-performing communities, hospitals were more involved in partnerships than in low-performing communities, especially local hospitals with sufficient financial stability to invest in population health. Finally, in high-performing communities, collaboration grew from shared social norms.

V. Key Findings

1. Addressing beneficiaries' social needs requires applying best practices to address social risk within the health care system and larger community.

Both the NASEM and RAND reports discussed in the best practices in providing care to socially at-risk beneficiaries section at the beginning of this chapter describe successful strategies to address beneficiaries' needs from the health system perspective. However, for communities and health systems to best address disparities in health outcomes caused by and exacerbated by social risk, researchers agree the country needs several systems in place including: a data and management system to assess population health, risk factors, and patterns of care; comprehensive needs-assessment planning to allow communities to identify and respond to clinical and social needs; collaborative partnerships within and across provider teams and social service providers within the community; and care-continuity plans for care transitions to prepare for patients' changing clinical and social needs. To ensure that patients can live their healthiest lives, these systems should all be designed with the patient at the forefront and created to engage patients in their own care.

2. Most current interventions to address social risk focus on screening for social risk, care management, and referring patients to local social service providers to address their needs.

Many organizations within the Department of Health and Human Services, other government agencies and states, and the private sector have implemented interventions to address beneficiaries' social risks, and these interventions take a variety of forms. However, the most common interventions are case management addressing both medical and social needs. Such programs often rely on the case manager to identify social needs and then refer beneficiaries to community organizations to address them. Alternatively, case managers may themselves help beneficiaries enroll in programs that address identified social needs.

3. More coordination and alignment between medical and social services is needed.

As evidenced through the best practices' frameworks and responses to ASPE's RFI, addressing social needs requires medical and social service providers to coordinate care. Yet organizational goals may differ between health care and social service providers. Sharing information within the health care system or between health and social service providers can be challenging, making it harder to follow up on whether beneficiaries have received needed services. Better coordination between these organizations would make addressing beneficiaries' social needs easier.

4. Many challenges identified by certain plans and providers are being successfully addressed by other plans and/or providers, but successful approaches need to be better disseminated.

Some of the comments to the ASPE RFI discussed challenges that other organizations have successfully addressed. These included data sharing between health and social service providers and developing community resources such as affordable housing or access to health food. Although each community is unique, sharing such successful strategies and best practices may help plans and providers that are still facing challenges that others have successfully addressed.

5. **More evaluation of interventions to address social risk is needed. There is little information about which interventions are successful and even less about how much implementing the intervention costs.**

Providing high-quality care for all beneficiaries requires understanding which approaches are successful for socially at-risk beneficiaries in particular. Although ASPE's RFI asked about evaluations of approaches to address social needs, most interventions described in the submitted responses did not include an evaluation, and almost none evaluated the return on investment for given interventions. Comments noted that it can be difficult to evaluate interventions while recognizing that evidence of efficacy is important. As the promising state and federal policies currently giving health plans flexibility to offer supplemental benefits to address social needs are implemented, it will be important to track which benefits are provided and successful. It will also be important to understand what supplemental benefits MA plans offer with the new flexibilities for supplemental benefits addressing social needs allowed by the CHRONIC Care Act of 2018, as well as whether these supplemental benefits are successful in addressing beneficiaries' social needs and improving health outcomes. Some published evaluations are already available, but more work still needs to be done to understand which strategies are most effective, whether effective approaches in one setting are transferrable to others, and whether small -scale approaches can be successfully scaled up to larger populations.

6. **Transportation, food insecurity, housing, and social support are the most commonly cited social risk factors that need addressing. Providers and plans are implementing numerous interventions to address transportation, food insecurity, and housing, but fewer addressing social support needs.**

Although commenters to the ASPE RFI mentioned many social risk factors, transportation, food insecurity, housing, and social support were the most common. In terms of implementing interventions that could address these social risk factors, transportation and food insecurity were most commonly addressed. Although there were not as many interventions addressing housing, a few were discussed, along with some current efforts to develop housing interventions. Interventions addressing social support or social isolation were discussed even less, although a few organizations mentioned working to address these needs.

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Section 4: Conclusion

Chapter 14. Policy Analysis and Considerations

I. Background: Policy Analysis Framework

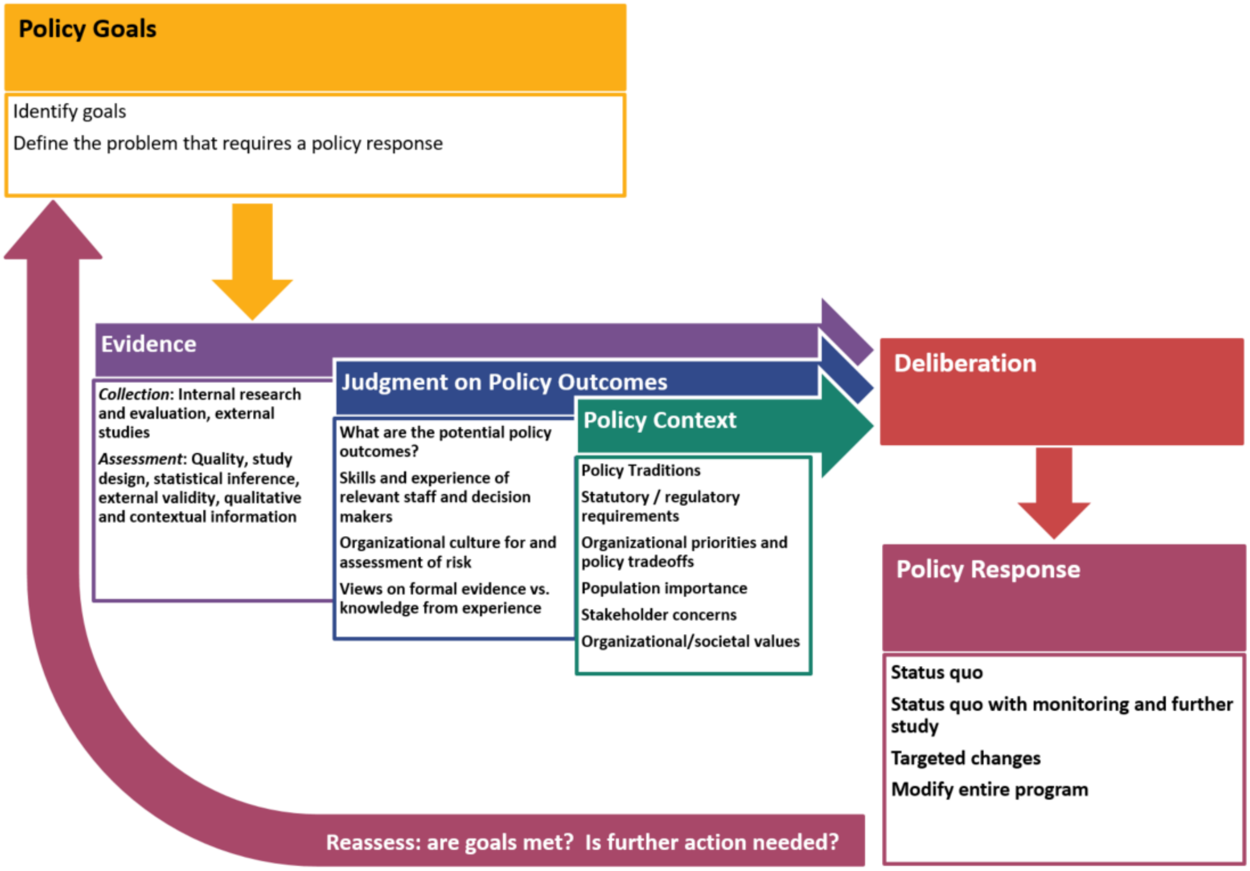
The previous chapters have presented the results of original research designed to inform decision making related to the following policy questions:

1. Should some or all of Medicare's value-based purchasing programs account for social risk by adjusting measures and/or payment?
2. Should the U.S. Department of Health and Human Services (HHS) routinely collect more extensive and detailed data on beneficiaries' social risk factors than is currently available?
3. How can HHS achieve better outcomes for all Medicare beneficiaries by facilitating the ability of providers and communities to address social risk factors and integrate health and social services?

In conducting the research, the Office of the Assistant Secretary for Planning and Evaluation (ASPE) has used the most recent and relevant quantitative data available and applied the most appropriate statistical methods for analyzing them, in addition to collecting and presenting relevant qualitative evidence. High-quality evidence is just one of many factors in an evidence-informed decision-making process. Decision makers evaluate (1) the short- and long-term consequences of various courses of action, (2) the interplay of these decisions with a variety of organizational priorities and goals, and (3)the relevant tradeoffs between them.

The decision-making framework displayed in Figure 14.1 guided the evaluation of options for the recommendations in this Report. This framework is useful for identifying and evaluating potential policy responses, particularly with regard to using all available evidence in conjunction with the many other relevant policy factors.

Figure 14.1. Policy Analysis Framework



Source: Sheingold S, Zuckerman RB, De Lew N, Joynt Maddox KE, Epstein AM. Should Medicare's Value-based Pricing be Adjusted for Social Risk Factors? The Role of Research Evidence in Policy Deliberations. Journal of Health Politics, Policy, and Law 2018;43:401-25. doi:10.1215/03616878-4366160.

The first step—covered in the introductory chapters of this Report—is to identify the policy goals and define the problem that requires a policy response. The problem definition helps to identify the scope of potential policy responses. The policy goals also provide the foundation for the policy evaluation criteria.

The second step is to gather the information needed to evaluate the potential policy options and their expected outcomes. This Report includes quantitative analyses evaluating the availability of social and functional risk information and the impacts of potential policy options, such as risk adjusting measures for social and functional risk. In addition to evidence, external information on the broad policy context is needed: what stakeholders (individuals or groups affected by the policy) are currently doing; have stakeholder perceptions or values changed since the last time policy change has been considered; and are there new statutory or regulatory requirements? In this Report, this step included qualitative information from interviews, case studies, and ASPE’s Request for Information (RFI) on provider and health plan approaches to improve care for Medicare beneficiaries with social risk factors.

The last step is the deliberative process by which policy makers evaluate all the information and policy options to develop a policy response. At this time, the policy goals established in the first step allow policy makers to compare options. They can use evaluation criteria to rate each policy option in terms of each of the policy goals. The resulting policy response may be one of the policy options considered, a combination of options, or a set of recommendations to meet the overall policy goals.

This chapter will illustrate the policy analysis process, using the example issue of whether and how to account for beneficiary social risk in Medicare's value-based purchasing (VBP) programs, the first policy question addressed in this Report. The following sections consider two sub-questions of this issue. The first is, "How should Medicare VBP programs account for social risk?" with the alternatives of 1) directly adjusting measures for social risk, 2) stratification based on social risk factors, 3) targeted policies based on assistance and improvement, and 4) incorporating health equity into VBP programs. The second question is, "Which measures or programs should account for social risk?" with the alternatives of 1) the status quo, 2) all measures/programs, 3) some measures/programs, and 4) no measures/programs. This chapter uses a set of criteria based on the framework described in Figure 14.1 to compare and evaluate these alternatives. These criteria reflect general organizational policy methods, traditions, and goals, as well as specific goals and objectives relevant to this particular policy issue. Note, however, that, as evidenced throughout this Report, achieving the goals of 1) improving health care quality and outcomes and 2) fostering health equity throughout the health care system requires an approach and consideration of policy options beyond Medicare's VBP programs. The next chapter includes recommendations to more broadly address these two policy goals.

II. Policy Goals and Evaluation Criteria

As laid out in the introduction to this Report, two key policy goals address the role of social risk in Medicare's VBP programs**.**

1. Improve overall health care quality and outcomes for all Medicare beneficiaries

   Delivery system transformation, through VBP, intends to provide high-quality care for all. Currently, the U.S. pays more per capita for health care than most countries yet has worse outcomes. Changing this situation requires fundamental changes to the health care delivery and payment system, including recognizing the role social risk factors play in health care and health outcomes.

2. Foster health equity throughout the health care delivery system

   Delivery system transformation should include a focus on health equity to address disparities in health and health care. This process includes considering whether and how VBP programs should account for social risk factors. Without addressing social risk, VBP programs will not provide incentives to reduce disparities and may discourage providers from caring for socially at-risk beneficiaries. Moreover, those providers who do treat socially at-risk beneficiaries may face financial stress from VBP payment reductions and be reluctant to participate in payment models that increase their financial risk.

These goals also help articulate the evaluation criteria used in the policy analysis, which was presented in Study A. For the example used in this chapter of whether and how to account for beneficiary social risk in

Medicare's VBP programs, the evaluation used the eight criteria below. (Note, however, that some of these criteria may not be applicable—and additional criteria may be needed—for policy analyses of other strategies to achieve the two policy goals.)

Evaluation criteria for options to account for beneficiary social risk in Medicare's VBP programs:

1. Encourages reduction in and, ultimately, elimination of disparities in quality and outcomes
2. Promotes transparency to facilitate consumer choice
3. Protects beneficiaries' access to care by removing disincentives to caring for high-risk populations
4. Protects providers, especially safety-net providers, from unfair financial stress
5. Accounts only for the difference in performance related directly to the social risk factor, and only for what is beyond provider control
6. Has stakeholder acceptance
7. Supports delivery system transformation
8. Has operational feasibility

Each policy option under consideration can be assessed based on these eight criteria. Each stakeholder may weigh the criteria differently, but stating and evaluating the potential options against the evaluation criteria provides a transparent consideration process. The rest of the chapter will work through this assessment process for the two questions under consideration (i.e., "How should Medicare VBP programs account for social risk?" and "Which measures or programs should account for social risk?"). Assessments of the policy options are based on findings from Study A and this Report (Study B); as additional evidence is available these assessments may change.

III. Evaluation of Question 1: How Should Medicare VBP Programs Account for Social Risk?

This section identifies potential policy options to account for social risk in Medicare's VBP programs and evaluates each against the eight evaluation criteria. Study A evaluated a set of four policy options to account for social risk in Medicare's VBP programs to determine incentive payments, particularly focused on setting high, fair quality standards. These options included (1) adjusting for social risk, (2) stratification by social risk factors, (3) rewarding improvement, and (4) targeted payments for social risk. A fifth policy option is also added for evaluation in this Report, (5) incorporating health equity into Medicare's VBP programs because it was a policy consideration presented in Study A.

These policy options are not mutually exclusive. For example, quality and resource use measures may be adjusted for social risk *and* VBP programs may incorporate health equity measures. Each of these options has pros and cons, and none is likely to fully satisfy all eight criteria outlined above. The details of implementation will vary by program and measure, but a broad overview for each policy option is provided below.

A. Adjustment for Social Risk Factors

The policy option to adjust for social risk factors is intended to ensure an apples-to-apples comparison of providers' performance for an "average" set of patients by controlling for differences in patient populations. Adjusting for social risk factors means including the social risk factor to the measure's risk adjustment, in addition to the current risk adjustment approach (typically demographics and comorbidities).

Of all the social risk factors examined in studies A and B, dual enrollment continues to be the strongest predictor of poor outcomes. Analyses in this Report examined additional social risk factors and functional risk factors, and found a smaller but persistent effect of dual enrollment on worse outcomes even after adjusting for these additional factors. These findings suggest that adding dual enrollment to quality and resource use measure risk adjustment could help to ensure apples-to-apples comparisons of providers.

Table 14.1 shows an assessment of the option of adjusting measures for social risk as measured by dual enrollment for the evaluation criteria. Across all of the tables in this chapter, low scores mean that the option does not meet the criterion, while high scores mean that the option does a good job of addressing it. Overall, this option moderately meets the criteria.

Table 14.1. Assessment of Adjusting Measures for Social Risk

Evaluation Criteria	Policy Option A. Adjust Measures for Social risk
1. Encourages reduction in disparities in quality and outcomes	Low
2. Protects beneficiaries' access to care	Moderate
3. Protects providers from unfair financial stress	Moderate-low
4. Accounts only for the difference in performance related directly to the social risk factor, and only for what is beyond provider control	Moderate-high
5. Promotes transparency to facilitate consumer choice	Moderate
6. Stakeholder acceptance	Moderate
7. Supports delivery system transformation	Moderate-low
8. Operational feasibility	Moderate

Note: Higher scores indicate that the option does a better job of meeting the criterion.

While this option does not explicitly encourage disparities reduction since it does not tie incentives to reduced disparities, it does address concerns about fairness of payment incentives, and could mitigate the potential for providers to cherry-pick patients and impede access to care.

Adjusting for social risk by definition accounts for differences related to social risk, but some of these differences could be within provider control, so adjustment is rated moderate on this criterion. These measures would also ensure apples-to-apples comparisons, but may also mask differences by social risk factors, so transparency is also rated moderate.

Since information on dual enrollment is readily available information from Medicare's administrative data, this potential policy option is also operationally feasible. However, because this adjustment could be implemented in various ways—across all measures, in some measures, or not all—and because stakeholders diverge greatly about these options, this adjustment will be examined in further detail for the second policy question.[1-4]

B. Stratification by Social Risk Factors to Determine VBP Payment Incentives

The stratification policy option determines VBP incentives within peer groups of providers, rather than across all providers. It recognizes that providers who disproportionately care for the beneficiaries with social risk factors may face greater challenges in achieving the same outcomes.

Under stratification, providers are divided into groups by their proportion of beneficiaries with social risk factors. Providers' relative performance is then recalculated, such that the benchmarks for achievement are group-specific, and each provider is only being compared to its peers—that is, providers with a similar patient population in terms of social risk. This approach inherently creates thresholds or "policy cliffs" where providers close to the threshold may reduce incentives for improving because they would then be subject to the higher benchmarks in the next peer group. It also requires that there are enough members in each peer group to have reliable scores for that peer group. It is currently used in the Hospital Readmissions Reduction Program (HRRP), where penalties are assigned within hospital peer groups determined by the proportion of dual-eligible beneficiaries treated. However, this peer grouping is a transitional adjustment for, and the statue allows the Secretary to take into account the findings from this Report for applying risk adjustment methodologies in the future.

Table 14.2 shows an assessment of the option of stratifying VBP programs by social risk factors. Low scores mean that the option does not meet the criterion, while high scores mean that the option does a good job of addressing it.

Table 14.2. Assessment of Stratifying Programs by Social Risk

Evaluation Criteria	Policy Option B. Stratify by Social Risk
1. Encourages reduction in disparities in quality and outcomes	Low
2. Protects beneficiaries' access to care	High
3. Protects providers from unfair financial stress	High
4. Accounts only for the difference in performance related directly to the social risk factor, and only for what is beyond provider control	Low
5. Promotes transparency to facilitate consumer choice	Low
6. Stakeholder acceptance	Moderate
7. Supports delivery system transformation	Low
8. Operational feasibility	Moderate

Note: Higher scores indicate that the option does a better job of meeting the criterion.

The scores for stratification vary across the criteria. The recent implementation of peer groups in the HRRP provides some evidence for two of the criteria: stakeholder acceptance and operational feasibility. Some stakeholders appear to support this approach, although some others have expressed concern that it would not motivate reductions in disparities.[5-11] The recent experience with this program demonstrates it is operationally feasible to stratify payment incentives based on providers' share of dually enrolled beneficiaries using information readily available in Medicare administrative data, as long as there are enough providers in each peer group to have reliable estimates.

The two high scores reflect the ability of this option to recognize structural differences across providers, mitigating the potential for undue financial stress on safety-net providers and therefore protecting beneficiaries' access to care.

On the other hand, this option scores low on four of the criteria. While stratified payment programs may encourage providers to improve quality within the peer group, they do not explicitly encourage disparities reduction. In fact, such programs could institutionalize disparities by allowing lower performance in some peer groups. By constructing peer groups based on providers' share of beneficiaries with social risk factors, stratification could also account for differences in outcomes within a provider's control, such as the quality of care or management. Consumers could see how providers performed within a peer group, but performance compared to all providers may be less transparent, especially if the peer group methodology is also used for public reporting. Finally, creating different standards for each peer group does not encourage delivery system transformation and may make it difficult to provide the same incentives for this transformation across the peer groups.

C. Rewarding Improvement in the Overall Population

Rewarding improvement means calculating the change in a provider's performance over time and including this change in program penalties or bonuses. This option is intended to reward overall improvement, rather than focusing specifically on reducing disparities. The goal of this option is to give credit to providers who demonstrate significant improvement, even if they have not met performance benchmarks.

Currently, strategies to incorporate improvement differ by program. Some, but not all, Medicare VBP programs—including the Hospital VBP program, the physician Merit-based Incentive Payment System (MIPS), the Medicare Shared Savings Program (MSSP) for accountable care organizations (ACOs), and the Medicare Advantage (MA) quality bonus payments — already reward improvement over time in addition to achievement.

Table 14.3 shows an assessment of the rewarding overall improvement option. Low scores mean that the option does not meet the criterion, while high scores mean that the option does a good job of addressing it. Overall, this option moderately meets the criteria.

Table 14.3. Assessment of Rewarding Overall Improvement

Evaluation Criteria	Policy Option C. Reward Overall Improvement
1. Encourages reduction in disparities in quality and outcomes	Moderate
2. Protects beneficiaries' access to care	Low
3. Protects providers from unfair financial stress	Moderate
4. Accounts only for the difference in performance related directly to the social risk factor, and only for what is beyond provider control	Moderate
5. Promotes transparency to facilitate consumer choice	Low
6. Stakeholder acceptance	Moderate-high
7. Supports delivery system transformation	High
8. Operational feasibility	High

Note: Higher scores indicate that the option does a better job of meeting the criterion.

As this option is not targeted to socially at-risk populations, it scores moderately on two criteria that it is unlikely to either improve or worsen: reducing disparities and accounting for differences in performance by social risk. Additionally, rewarding improvement might discourage providers from treating socially at-risk patients if those patients could lower their overall scores, so this option is rated low on protecting access to care. In terms of promoting transparency, too, scores that combine improvement and achievement make it difficult for consumers to isolate the achievement portion, which is a better indicator of the quality of care they would expect to receive.

On the other hand, this approach may protect providers from unfair financial stress because their scores include improvement and are not solely reliant on achievement. Stakeholders have tended to support including improvement for these reasons.[12,13]

In addition, this option scores high on operational feasibility due to the number of programs in which it has already been implemented. It also scores high on supporting delivery system transformation, since this option rewards improvements in health quality, one of the key goals in transformation.

D. Targeted Payments: Additional Payments for High Performance in Socially At-Risk Patients and/or Support for Quality Improvement

This policy option is designed to encourage high performance for beneficiaries with social risk factors, recognizing improved care and outcomes in these groups as an important goal. Targeted payments to providers may be based on performance and/or improvement, or they may be given to all safety-net providers.

Under this option, direct support, either financial or technical, is targeted to providers serving socially at-risk beneficiaries to help improve performance or build infrastructure and capacity to address social needs. The ACO Investment Model and the Small, Underserved, and Rural Support technical assistance offered by MIPS, for example, recognize the need to provide upfront payments to help providers with limited resources and experience participate in delivery system transformation.[14,15] Targeted payments and operational support recognize that addressing social needs or coordinating with community and social services may require additional investments by providers and insurers.

The specific mechanism for providing such targeted payments could vary and include such forms as technical assistance or payments to health care and community service providers for supporting coordination of services, similar to the Accountable Health Communities model.

Table 14.4 shows an assessment of targeted social risk payments for the evaluation criteria. Low scores mean that the option does not meet the criterion, while high scores mean that the option does a good job of addressing it. Overall, this option scores moderate to high across almost all the criteria.

Table 14.4. Assessment of Targeted Socal Risk Payments

Evaluation Criteria	Policy Option D. Targeted Social Risk Payments
1. Encourages reduction in disparities in quality and outcomes	Moderate
2. Protects beneficiaries' access to care	High
3. Protects providers from unfair financial stress	Moderate-high
4. Accounts only for the difference in performance related directly to the social risk factor, and only for what is beyond provider control	Moderate
5. Promotes transparency to facilitate consumer choice	Moderate
6. Stakeholder acceptance	High
7. Supports delivery system transformation	High
8. Operational feasibility	Need further testing & evaluation

Note: Higher scores indicate that the option does a better job of meeting the criterion.

This policy option scores high on three criteria. By providing incentives for high-quality care for socially at-risk populations, targeted social risk payments would help motivate providers to treat at-risk patients and protect their access to care. Stakeholders also support the recognition that achieving high-quality outcomes for these populations may require more resources, particularly if these targeted payments are funded from a separate pool of funds rather than in a budget-neutral manner that reduces other payments.[16] Additionally, support for socially at-risk populations can make the transition easier to payment models with greater risk for providers, supporting delivery system transformation.

In terms of accounting for social risk, this option does account for differences by the social risk factor, but, similar to the stratification option, may account for some differences within the providers' control. For this reason, this option is rated moderate for this criterion. Furthermore, although additional payments could help to protect providers from unfair financial stress, experience with Medicaid and Medicare disproportionate share hospital (DSH) payments has not shown that add-on payments are sufficient to address inequities in resources for safety-net providers. For that reason, this option scores moderate on this criterion and stakeholder acceptance.[17-22]

Whether targeted payments promote transparency depends on how they are implemented. These targeted payments may be depend on improvement or achievement, or they may be given to all safety-net providers. Targeted payments based on achievement would likely increase transparency. On the other hand basing these payments on improvement may reduce transparency for reasons similar to those discussed in the rewarding overall improvement option above.

Finally, determining how this option would be implemented to be most effective as well as the feasibility of implementation will require further evaluation. As more payers and states experiment with targeted payments, more evidence will be available on potential approaches.

E. Incorporating Health Equity

The last option considered in answering Question 1 was incorporating a health equity category in VBP programs, along with existing performance categories based on quality and resource use, quality improvement activities, and interoperability of electronic health record data. A health equity category could recognize and reward providers for demonstrating a commitment to health equity. It could include specific health equity or disparities measures to track and reward improvements over time or for achieving high performance for socially at-risk beneficiaries. Currently, however, there are no health equity performance measures that have been developed and used in VBP programs. The Centers for Medicare & Medicaid Services (CMS) has started to develop and report some measures stratified by dual enrollment but has not yet incorporated these measures in public reporting or determined how they could be used in payment incentives.[23]

Table 14.5 shows an assessment of the option of incorporating health equity into VBP programs for the evaluation criteria. Low scores mean that the option does not meet the criterion, while high scores mean that the option does a good job of addressing it. Overall, this option is rated highly across the evaluation criteria.

Table 14.5. Assessment of Incorporating Health Equity

Evaluation Criteria	Policy Option E. Incorporate Health Equity
1. Encourages reduction in disparities in quality and outcomes	High
2. Protects beneficiaries' access to care	High
3. Protects providers from unfair financial stress	Moderate
4. Accounts only for the difference in performance related directly to the social risk factor, and only for what is beyond provider control	Moderate
5. Promotes transparency to facilitate consumer choice	High
6. Stakeholder acceptance	High
7. Supports delivery system transformation	High
8. Operational feasibility	Need further testing & evaluation

Note: Higher scores indicate that the option does a better job of meeting the criterion.

This option is rated high on five of the eight criteria. Since it holds providers accountable for health equity, it encourages reductions in disparities and increases transparency on this issue. Focusing on health equity also provides incentives to care for socially at-risk populations, protecting their access to care. As with the targeted payments option, support for socially at-risk populations can make the transition easier to payment models with greater risk for providers, supporting delivery system transformation. Since this option is rated highly on so many other criteria, it is also likely to have stakeholder support.[24,25]

In terms of protecting providers from undue financial stress and accounting only for what is beyond providers' control, this option is only rated moderate, mainly because such protection will vary depending on the actual policies implemented. Nonetheless, depending on the relative weight of the measures, a health equity domain or performance category in Medicare's VBP programs at least has the potential to mitigate financial impacts of poor performance on outcomes measures.

Finally, the table notes that more evaluation is needed to determine how this option would be implemented to be most effective. This rating reflects the fact that health equity is not currently included in any VBP programs.

F. Summary of Policy Options

The ratings of the five potential policy options in Table 14.6 illustrate that no single policy option addresses all eight policy goals.

Table 14.6. Assessment of Options to Account for Social Risk in Medicare VBP Programs

Evaluation Criteria	Policy Options				
	A. Adjust Measures for Social risk	B. Stratify by Social Risk	C. Reward Overall Improvement	D. Targeted Social Risk Payments	E. Incorporate Health Equity
1. Encourages reduction in disparities in quality and outcomes	Low	Low	Moderate	Moderate	High
2. Protects beneficiaries' access to care	Moderate	High	Low	High	High
3. Protects providers from unfair financial stress	Moderate-low	High	Moderate	Moderate-high	Moderate
4. Accounts only for the difference in performance related directly to the social risk factor, and only for what is beyond provider control	Moderate-high	Low	Moderate	Moderate	Moderate
5. Promotes transparency to facilitate consumer choice	Moderate	Low	Low	Moderate	High
6. Stakeholder acceptance	Moderate	Moderate	Moderate-high	High	High
7. Supports delivery system transformation	Moderate-low	Low	High	High	High
8. Operational feasibility	Moderate	Moderate	High	Need further testing & evaluation	

Note: Higher scores indicate that the option does a better job of meeting the criterion.

The options in Table 14.6 are not mutually exclusive, so VBP programs could adopt more than one of them. Two of the options clearly score higher across the criteria with no low scores: targeted social risk payments and incorporating health equity. Both of these are recommended in this Report. Adjusting measures for social risk and stratifying by social risk in VBP programs have similar effects although use different methods: both account for a provider's of socially at-risk beneficiaries a provider serves in determining VBP payment adjustments. Of these, adjusting measures for social risk has fewer low scores and more moderate scores, and as such is the recommended approach in this Report.

IV. Evaluation of Question 2: Which Measures or Programs Should Account for Social Risk?

The first policy option from question 1 (accounting for social risk in Medicare VBP programs through adjustment for social risk) will be evaluated in greater depth by considering which specific measures or programs should account for social risk. In particular, once an approach to account for social risk has been selected, the question remains as to how to apply the approach: for everything, in some cases, or not at all.

As noted earlier, there are divergent views among stakeholders on adjusting for social risk in performance measures used in VBP programs. Stakeholders are concerned with fairness but also with potentially masking disparities by adjusting for social risk. Study B found that even after improving clinical risk adjustment with functional risk factors, a smaller but significant relationship between dual enrollment and worse outcomes persists. Which measures should be adjusted for social risk thus continues to be a relevant question. Choices for whether (and when) to adjust measures for social risk include 1) maintaining the status quo, 2) always adjusting measures for social risk, 3) never adjusting measures for social risk, and 4) adjusting for social risk in certain circumstances. Each of these four choices was evaluated below against the policy evaluation criteria described in the last section.

A. Maintain the Status Quo

Table 14.7 assesses the status quo approach to social risk adjustment against the evaluation criteria. Currently, some measures and some VBP programs are adjusted for social risk and others are not, without a single, clear governing principle for when to adjust for social risk. For example, the end-stage renal disease (ESRD) mortality measure adjusts for race, and the total per capita cost (TPCC) measure includes dual enrollment in the hierarchical condition category (HCC) risk score, but the readmission measures do not include any social risk factors.

The lack of clarity in the goals under the status quo, inconsistency in the methods, and lack of supporting rationale across VBP programs mean that the status quo approach cannot be summarized in a single policy. For this reason, it is not particularly effective at satisfying most of the evaluation criteria: it does not consistently encourage reductions in disparities and outcomes, protect beneficiaries' access to care, protect providers from unfair financial stress, adjust for differences in performance related to social risk beyond the providers' control, promote transparency, support delivery system transformation, or have stakeholder acceptance.[26] Notably, in fact, stakeholder opposition to the current situation was part of the reason that Congress originally tasked ASPE with this Report. However, the status quo does inherently have high operational feasibility because the system is already in place and does not require CMS or providers to collect additional data.

Table 14.7. Assessment of Status Quo

Evaluation Criteria	Policy Option F. Status Quo
1. Encourages reduction in disparities in quality and outcomes	Low
2. Protects beneficiaries' access to care	Low
3. Protects providers from unfair financial stress	Low
4. Accounts only for the difference in performance related directly to the social risk factor, and only for what is beyond provider control	Low
5. Promotes transparency to facilitate consumer choice	Low
6. Stakeholder acceptance	Low
7. Supports delivery system transformation	Low
8. Operational feasibility	High

Note: Higher scores indicate that the option does a better job of meeting the criterion.

B. Adjust All Quality and Resource Use Measures

One alternative to the status quo is to adjust all quality and resource use measures in VBP programs for beneficiary social risk factors. Using the evaluation criteria to examine this option, this potential policy response has high-to-moderate ratings for most of the evaluation criteria (Table 14.8).

Table 14.8. Assessment of Adjusting All Measures for Social Risk

Evaluation Criteria	Policy Option G. Adjust All
1. Encourages reduction in disparities in quality and outcomes	Low
2. Protects beneficiaries' access to care	High
3. Protects providers from unfair financial stress	Moderate
4. Accounts only for the difference in performance related directly to the social risk factor, and only for what is beyond provider control	High
5. Promotes transparency to facilitate consumer choice	Moderate
6. Stakeholder acceptance	High
7. Supports delivery system transformation	Moderate-low
8. Operational feasibility	Moderate

Note: Higher scores indicate that the option does a better job of meeting the criterion.

For the first evaluation criterion (encouraging reduction in quality and outcome disparities), always adjusting measures for social risk would support apples-to-apples comparison of providers. However, this option might not encourage providers to reduce disparities as it does not tie incentives to reduced disparities. In addition, this option alone might not sufficiently protect providers from unfair financial stress, the third evaluation criterion. Although the programs would likely be perceived to be fairer than the status quo, ASPE's policy simulations show limited impact on provider rankings and payments for providers who disproportionately serve beneficiaries with social needs. This finding suggests that social risk adjustment would be insufficient to protect providers from unfair financial stress, explaining the moderate rating for this criterion.

On the other hand, risk adjusting all measures for social risk could help providers feel their efforts to improve overall quality and health outcomes are not hampered by aspects outside of their control, and therefore would be likely to reduce incentives to cherry-pick patients and would protect beneficiaries' access to care. Thus, this option is rated high for stakeholder acceptance.[1,27-29] It would also allow the empirical relationship between the social risk factor and the outcome to speak for itself, as it adjusts only for the difference related directly to the social risk factor. For that reason, this option is rated high for the fourth criterion.

This option moderately promotes transparency to facilitate consumer choice by allowing apples-to-apples comparisons of providers, even though it does not explicitly provide information for patient subgroups. The option is also rated moderate for supporting overall delivery system transformation because a blanket policy is unlikely to meet the changing payment landscape; as the delivery system is transformed quality and resource use measures need to have the flexibility to change with it.

Finally, the option of adjusting all measures for social risk is operationally feasible without collecting additional data by using dual enrollment and area-level measures of neighborhood deprivation. However, this process may be more challenging if more granular social risk measures—such as social support, food or housing insecurity—are desired, at least until such data are collected more systematically across all providers and settings. Therefore, this overall option is rated moderately feasible.

C. Adjust No Measures for Social Risk

Another option is to never adjust measures for social risk. This option scores high on three of the evaluation criteria (reduction in disparities, transparency for consumer choice, and operational feasibility), but low on the other five (Table 14.9).

Table 14.9. Assessment of Adjusting No Measures for Social Risk

Evaluation Criteria	Policy Option H. Adjust None
1. Encourages reduction in disparities in quality and outcomes	High
2. Protects beneficiaries' access to care	Low
3. Protects providers from unfair financial stress	Low
4. Accounts only for the difference in performance related directly to the social risk factor, and only for what is beyond provider control	Low
5. Promotes transparency to facilitate consumer choice	Moderate-high
6. Stakeholder acceptance	Low
7. Supports delivery system transformation	Moderate-low
8. Operational feasibility	High

Note: Higher scores indicate that the option does a better job of meeting the criterion.

The option to never adjust for social risk promotes transparency to facilitate consumer choice and provide information to the health system and community, earning it a rating for moderate-high for this criterion. It is also operationally feasible since no changes are made to the programs and since no additional data need to be collected.

On the other hand, this approach received lower ratings for the other criteria. Although not adjusting for social risk motivates providers to have the same high-quality care for all beneficiaries, encouraging reductions in disparities in quality and outcome if providers cannot achieve the same level of care for socially at-risk beneficiaries, they may face unfair financial stress from VBP payment reductions. For this reason, stakeholders are unlikely to support this option.[1,27-29] Providers facing unfair financial stress may also have less incentive to care for beneficiaries with social risk factors, so this option also scores low on protecting beneficiaries' access to care.

Similarly, if the measure risk adjustment excludes differences between patients that influence health outcomes, such as social risk, providers may not have the incentive to take on additional financial risk for those outcomes through delivery system transformation. As with the "always adjust" option, then, a blanket policy against adjustment is unlikely to meet the changing delivery system and payment landscape, so this option is rated moderate.

Finally, by definition, this option does not adjust for differences related to the social risk factor, so it scores low on the fourth criterion.

D. Adjust in Certain Cases

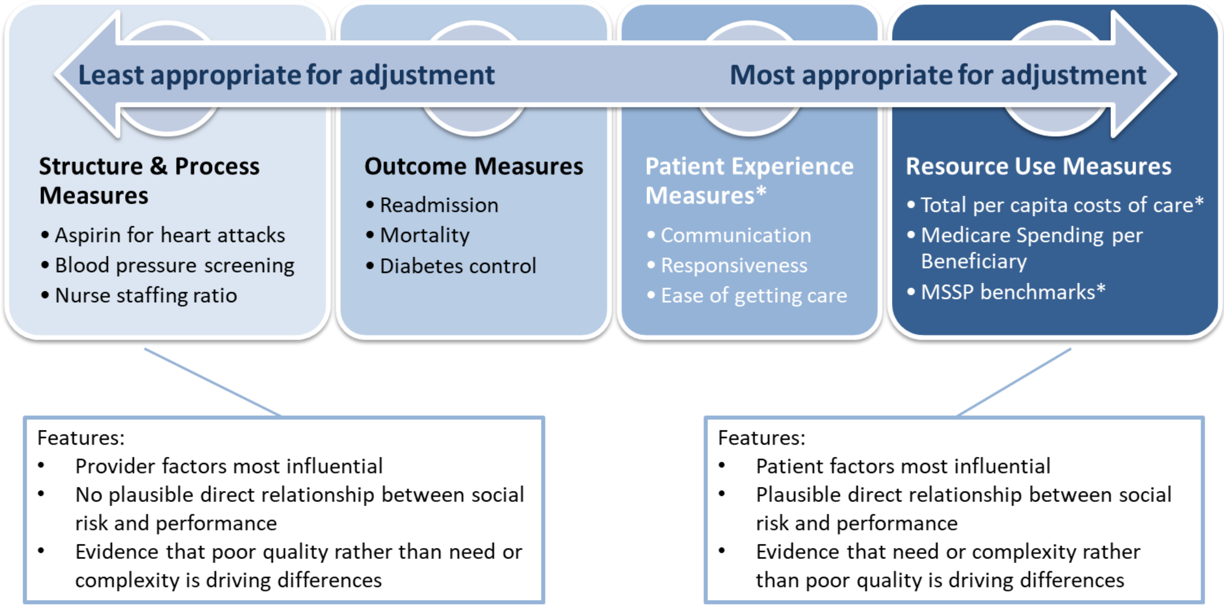
The last option is to adjust measures for social risk in certain circumstances including type of measure or the length of time that has passed since care was provided. Each of these approaches is considered below.

1. Adjust Certain Types of Measures

Figure 14.2 shows a continuum of measures and their appropriateness for social risk adjustment. Measures are less appropriate for adjustment (left side of the diagram) 1) if they are predominantly under the control of the provider, 2) if there is no plausible direct relationship between the social risk factor and the outcome, and 3) if there is evidence that provider bias, rather than patient need or complexity, is driving differences in performance. Aspirin for a heart attack, a process measure, fits these criteria for less appropriateness because it is under the provider's control in a hospital setting; there is no plausible reason that dually enrolled beneficiaries should get aspirin at a lower rate (unless contraindicated due to a specific comorbid condition); and any differences seen within a hospital setting may reflect provider bias rather than differences in patient need or complexity.

Measures are more appropriate for adjustment (right side of the diagram) if the differences in outcomes or utilization are 1) predominantly related to patient factors, 2) if there is a plausible direct relationship between the social risk factor and the outcome, and 3) if there is evidence that need or complexity, rather than provider performance, is driving differences in performance. The total per capital cost (TPCC) measure used in the MIPS program meets these criteria.

Figure 14.2. Considerations for Adjusting Quality and Resource Use Measures for Social Risk by Measure Type



Features:
- Provider factors most influential
- No plausible direct relationship between social risk and performance
- Evidence that poor quality rather than need or complexity is driving differences

Features:
- Patient factors most influential
- Plausible direct relationship between social risk and performance
- Evidence that need or complexity rather than poor quality is driving differences

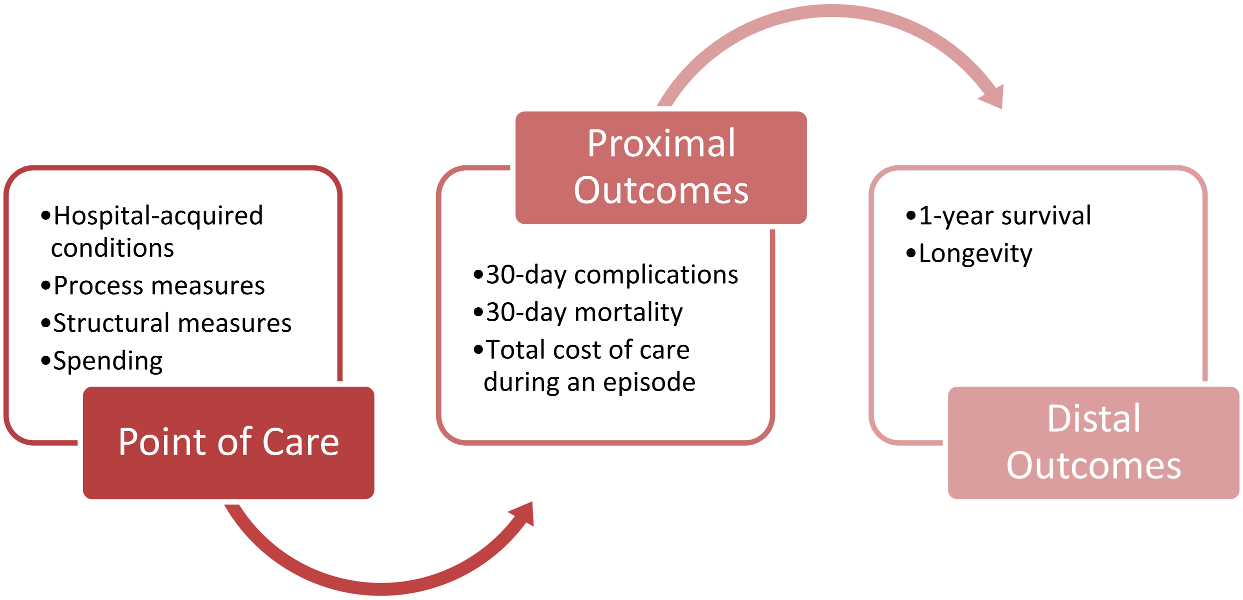
*=measure currently adjusted for social risk factor(s)

Note: MSSP=Medicare Shared Savings Program

2. Adjust Certain Measures by Time from Point of Care

Figure 14.3 shows the degree of control providers have over outcomes based on time—that is, how proximal or distal they are—from the point of care and care setting. The degree of provider control diminishes over time. Population-based health models that are accountable for long-term population outcomes extend for a much longer time from the point of care than fee-for-service payments, giving providers or plans control over longer-term outcomes.

Figure 14.3. Considerations for Adjusting Quality and Resource Use Measures for Social Risk: Time from Point of Care



3. Evaluation of Adjusting in Certain Cases

Evaluating the option to adjust quality and resource use measures for social risk in certain cases results in moderate and high ratings in meeting most of the overall policy goals (Table 14.10). This option—which can include either of the dimensions examined above (degree of provider control or proximal vs. distal outcomes) or some other standard—can be implemented using empirical and/or theoretical standards to determine when adjustment is appropriate.

Table 14.10. Assessment of Adjusting Measures for Social Risk in Certain Cases

Evaluation Criteria	Policy Option I. Adjust in Certain Cases
1. Encourages reduction in disparities in quality and outcomes	Moderate
2. Protects beneficiaries' access to care	Moderate-high
3. Protects providers from unfair financial stress	Moderate
4. Accounts only for the difference in performance related directly to the social risk factor, and only for what is beyond provider control	Moderate-high
5. Promotes transparency to facilitate consumer choice	Low
6. Stakeholder acceptance	Moderate
7. Supports delivery system transformation	High
8. Operational feasibility	Moderate

Note: Higher scores indicate that the option does a better job of meeting the criterion.

The first policy criterion only receives a moderate rating because adjusting measures in certain cases may not directly encourage reductions in disparities unless reducing disparities is specifically included in any particular adjustment standard.

For the second policy criterion, protecting beneficiary access to care, allowing adjustment in cases where differences in outcomes are larger, clinically significant, or within a providers control may reduce disincentives to care for high risk beneficiaries and protect beneficiaries' access to care. In terms of delivery system transformation, too, this nuanced, criteria-based approach may better help providers embark on the journey towards outcomes-based payment. Therefore, it is rated highly.

The third policy criterion, protecting providers from unfair financial stress, received a moderate rating because, similar to the "always adjust option," ASPE's policy simulations indicate that risk adjustment in certain cases would have a limited impact on provider rankings and payments. This option is therefore unlikely to protect providers from unfair financial stress, but also would not add additional stress.

Adjusting only under certain circumstances can support the fourth criterion to adjust only for differences in performance related directly to the social risk factors that are beyond the providers' control. In practice, this criterion could be operationalized using an empirical approach, such as risk adjusting measures with large, clinically significant differences. It could also be operationalized using a theoretical assessment such as adjusting measures for social risk when there is a theoretical relationship between addressing social needs and the health outcome being assessed.

For the fifth criterion, promoting transparency to support consumer choice, adjusting only some measures could result in inconsistent and differential application of adjustment among measure developers and across VBP programs, as is the case today. Such inconsistency could make it difficult for providers and consumers to interpret publicly reported measures. Therefore, this option may not promote transparency to facilitate consumer choice.

Similarly, for the criterion of stakeholder acceptance, a case-by-case approach to adjustment could lead providers to question the efficacy of the policy. This approach would require more effort for providers to know if, when, and to what degree specific social risk factors were included in each measure.[26]

Lastly, similar to the option to adjust all measures, adjusting for dual-enrollment status and area-level measures of neighborhood deprivation is feasible.

E. Summary of Policy Options

Table 14.11 shows the ratings for all four policy options for question 2. As with the options for question 1, no single option meets every criteria for addressing all the policy goals.

Table 14.11. Assessment of Options for Determining Which Measures to Adjust for Social Risk

Evaluation Criteria	Policy Options			
	F. Status Quo	G. Adjust All	H. Adjust None	I. Adjust in Certain Cases
1. Encourages reduction in disparities in quality and outcomes	Low	Low	High	Moderate
2. Protects beneficiaries' access to care	Low	High	Low	Moderate-high
3. Protects providers from unfair financial stress	Low	Moderate	Low	Moderate
4. Accounts only for the difference in performance related directly to the social risk factor, and only for what is beyond provider control	Low	High	Low	Moderate-high
5. Promotes transparency to facilitate consumer choice	Low	Moderate	Moderate-high	Low
6. Stakeholder acceptance	Low	High	Low	Moderate
7. Supports delivery system transformation	Low	Moderate-low	Moderate-low	High
8. Operational feasibility	High	Moderate	High	Moderate

Note: Higher scores indicate that the option does a better job of meeting the criterion.

Unlike the options for accounting for social risk discussed in the section above, the options in Table 14.11 are mutually exclusive so only one can be implemented. As shown in the table, adjusting all measures or adjusting in certain cases both score higher than the status quo or adjusting none. The recommendation in this Report is to adjust in certain cases, specifically for certain types of measures.

V. Summary

To summarize, there is no single policy option that clearly achieves all the policy objectives, and there are inherent trade-offs between the evaluation criteria. The next step after evaluating policy options is deliberation about additional considerations including the trade-offs between options, possible combinations of options to better address policy goals, and prioritizing evaluation criteria to help guide decision making.

The next chapter presents this last step in the policy analysis process and includes recommendations for addressing social risk in Medicare's VBP programs.

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Chapter 15. Summary of Findings and Recommendations

This chapter first summarizes the findings and implications of the earlier chapters of this Report. It then addresses the IMPACT Act's final requirement to Office of the Assistant Secretary for Planning and Evaluation (ASPE) to make recommendations on accounting for social risk in Medicare's value-based purchasing (VBP) programs.

The law specifically requires that the Secretary of the U.S. Department of Health and Human Services (HHS), acting through ASPE, make recommendations as described in the legislation:

IMPROVING MEDICARE POST-ACUTE CARE TRANSFORMATION ACT OF 2014

Public Law 113-185

113th Congress

SEC. 2. STANDARDIZATION OF POST-ACUTE CARE DATA.

…

(d) IMPROVING PAYMENT ACCURACY UNDER THE PAC PAYMENT SYSTEMS AND OTHER MEDICARE PAYMENT SYSTEMS.—

(1) STUDIES AND REPORTS OF EFFECT OF CERTAIN INFORMATION ON QUALITY AND RESOURCE USE.—

(A) STUDY USING EXISTING MEDICARE DATA.—

(i) STUDY.—The Secretary of Health and Human Services (in this subsection referred to as the ''Secretary'') shall conduct a study that examines the effect of individuals' socioeconomic status on quality measures and resource use and other measures for individuals under the Medicare program under title XVIII of the Social Security Act (42 U.S.C. 1395 et seq.) (such as to recognize that less healthy individuals may require more intensive interventions). The study shall use information collected on such individuals in carrying out such program, such as urban and rural location, eligibility for Medicaid under title XIX of such Act (42 U.S.C. 1396 et seq.) (recognizing and accounting for varying Medicaid eligibility across States), and eligibility for benefits under the supplemental security income (SSI) program. The Secretary shall carry out this paragraph acting through the Assistant Secretary for Planning and Evaluation.

(ii) REPORT.—Not later than 2 years after the date of the enactment of this Act, the Secretary shall submit to Congress a report on the study conducted under clause (i).

(B) STUDY USING OTHER DATA.—

(i) STUDY.—The Secretary shall conduct a study that examines the impact of risk factors, such as those described in section 1848(p)(3) of the Social Security Act (42 U.S.C. 1395w–4(p)(3)), race, health literacy, limited English proficiency (LEP), and Medicare beneficiary activation, on quality measures and resource use and other measures under the Medicare program (such as to recognize that less healthy individuals may require more intensive interventions). In conducting such study the Secretary may use existing Federal data and collect such additional data as may be necessary to complete the study.

(ii) REPORT.—Not later than 5 years after the date of the enactment of this Act, the Secretary shall submit to Congress a report on the study conducted under clause (i).

(C) EXAMINATION OF DATA IN CONDUCTING STUDIES.—

In conducting the studies under subparagraphs (A) and (B), the Secretary shall examine what non-Medicare data sets, such as data from the American Community Survey (ACS), can be useful in conducting the types of studies under such paragraphs and how such data sets that are identified as useful can be coordinated with Medicare administrative data in order to improve the overall data set available to do such studies and for the administration of the Medicare program.

(D) RECOMMENDATIONS TO ACCOUNT FOR INFORMATION IN PAYMENT ADJUSTMENT MECHANISMS.—If the studies conducted under subparagraphs (A) and (B) find a relationship between the factors examined in the studies and quality measures and resource use and other measures, then the Secretary shall also provide recommendations for how the Centers for Medicare & Medicaid Services should—

(i) obtain access to the necessary data (if such data is not already being collected) on such factors, including recommendations on how to address barriers to the Centers in accessing such data; and

(ii) account for such factors—

(I) in quality measures, resource use measures, and other measures under title XVIII of the Social Security Act (including such measures specified under subsections (c) and (d) of section 1899B of such Act, as added by subsection (a)); and

(II) in determining payment adjustments based on such measures in other applicable provisions of such title.

(E) FUNDING.—There are hereby appropriated to the Secretary from the Federal Hospital Insurance Trust Fund under section 1817 of the Social Security Act (42 U.S.C. 1395i) and the Federal Supplementary Medical Insurance Trust Fund under section 1841 of such Act (42 U.S.C.1395t) (in proportions determined appropriate by the Secretary) to carry out this paragraph $6,000,000, to remain available until expended.

I. Main Findings

Study A laid out three strategies for accounting for social risk in Medicare's VBP programs to ensure that all Medicare beneficiaries receive the highest-quality health care services. The findings in this Report reinforce the need for such strategies. Proposed solutions that address only the measures or programs without considering the broader delivery system and policy context are unlikely to mitigate the full implications of the relationship between social risk factors and outcomes. VBP programs need to be leveraged to enhance access to and provision of high-quality care for beneficiaries with social risk factors.

The findings in this Report build on those of Study A, particularly the strategies for accounting for social risk in Medicare's VBP programs (Figure 15.1). The first strategy, "measure and report quality," deals with collecting and using social risk information. The second strategy, "set high, fair quality standards," refers to the use of social risk information in quality and resource use measures and in VBP programs. Finally, "reward and support better outcomes" addresses the need to address beneficiaries' social needs directly.

Figure 15.1. Strategies for Accounting for Social Risk in Medicare's Value-Based Purchasing Programs

Looking across the quantitative and qualitative analyses conducted for this Report, the following three main findings emerge.

A. FINDING 1: Beneficiary social risk information is not routinely or systematically collected across the health care system, and there is not always standardized terminology to capture beneficiary social risk information.

A prerequisite to measuring and reporting quality for beneficiaries with social risk factors is knowing beneficiaries' social needs. A consistent theme found throughout the qualitative research in this Report was the lack of available information on beneficiaries' social risk. Currently, when individual-level social risk information is collected, it may be recorded using one of the many screening tools available and documented in varying locations, including electronic health record (EHR) fields, free text notes, or as diagnoses. This lack of standardization in data collection and documentation makes it difficult to share data meaningfully between providers, payers, and social service organizations.

Despite these limitations, there is broad interest in having information on beneficiaries' social risk. All the EHR vendors included as case studies in this Report are incorporating social risk information into their tools in response to client demand. Additionally, submitters to ASPE's RFI (Request for Information) on provider and health plan approaches to improving care for Medicare beneficiaries with social risk factors discussed the need for standards on social risk data collection to support interoperability.

B. FINDING 2: After accounting for additional social and functional risk factors, dual-enrollment status remains a powerful predictor of poor outcomes on some quality and resource use measures in Medicare's VBP programs. Functional status is also a powerful predictor of poor outcomes on some measures but is not always included in measure risk adjustment.

Setting high, fair quality standards for all beneficiaries involves accurately accounting for differences between beneficiaries that may affect health outcomes. This Report evaluated additional individual-level social risk factors available in the Medicare Current Beneficiary Survey (MCBS): marital status, education, language, living alone, income, wealth, and private health insurance. It also included the area-level social risk factors of the social capital index and social deprivation index. When each social risk factor was evaluated separately, all the individual-level social risk factors were associated with higher spending and readmission rates. However, when all of the social risk factors were included together, only a couple were still associated with poor outcomes. Dual enrollment in Medicare and Medicaid was associated with both higher spending and readmissions, and social relationships (not being married or living alone) was associated with higher spending. In the total per capita cost measure (TPCC), dual enrollment was a stronger predictor of higher costs than social relationships—confirming Study A's finding that dual enrollment is the most powerful predictor of poor outcomes among the social risk factors evaluated (Table 15.1 and Table 15.2 below). This finding points to the need to assess health equity and provide adequate information on providers' performance based on who they serve.

This Report also evaluated the current medical risk-adjustment approaches. It assessed the extent to which unmeasured functional risk factors (defined as physical or cognitive impairments that impair functioning) may contribute to observed worse outcomes among dually enrolled beneficiaries using both claims-based and patient self-reported functional limitations. In most quality and resource use measures evaluated, functional risk was associated with both dual-enrollment status and poor outcomes, indicating that not accounting for functional risk may increase the observed effect of dual-enrollment status.

Table 15.1. Summary of the Effect of Dual Enrollment on Total per Capita Costs across Study A and Study B Analyses

	Study A	Study B: Claims	Study B: MCBS
Data Year	2013	2014	2010-2013
N	5,188,987	25,876,256	20,461
Average TPCC	$12,007	$11,868	$11,898
Difference in TPCC between Dually Enrolled and Non-Dually Enrolled Beneficiaries			
Raw Difference	**$6,726**	**$6,100**	**$6,700**
Model			
Measure Risk Adjustment (RA)	**725**	**400**	**2,200**
RA + Social Risk Factors		**300**	**3,100**
RA + Functional Risk Factors		**-1,100**	729
RA + Functional Risk Factors + Social Risk Factors		**-900**	2,520

Notes: Bolded model coefficients are statistically significant at p<0.05. Social and functional risk factors differ across analyses. For Study B claims analyses, social risk factors are: disabled as the original reason for Medicare enrollment, rurality (living outside a metropolitan statistical area (MSA)), race/ethnicity (Black, Hispanic, White, other), ZIP code median income, social deprivation index (SDI), and social capital index; functional risk factors are: frailty-related diagnoses, functional dependence, mental and behavioral health disorders, and potentially disabling conditions. For Study B MCBS analyses, social risk factors are: rurality (living outside a metropolitan statistical area (MSA)), race/ethnicity (Black, Hispanic, White, other), marital status, education, language, living alone, private health insurance, home ownership, income, total assets, and social deprivation index; functional risk factors are: activities of daily living, instrumental activities of daily living, general health status, and frailty-related diagnoses. MCBS=Medicare Current Beneficiary Survey; TPCC=total per capita costs.

Table 15.2. Summary of the Effect of Dual Enrollment on Readmissions in the Surgical Cohort across Study A and Study B Analyses

	Odds of Readmission in the Surgical Cohort for Dually Enrolled Compared to Non-Dually Enrolled Beneficiaries		
	Study A	Study B: Claims	Study B: MCBS
Data Year	2013	2012-2015	2010-2013
Raw Difference	**1.72**	**1.52**	**1.89**
Model			
Measure Risk Adjustment (RA)	**1.58**	**1.18**	1.43
RA + Social Risk Factors		**1.15**	1.73
RA + Functional Risk Factors		**1.06**	1.26
RA + Functional Risk Factors + Social Risk Factors		**1.05**	1.60

Note: Bolded model coefficients are statistically significant at p<0.05. Social and functional risk factors differ across analyses. For Study B claims analyses, social risk factors are disabled as the original reason for Medicare enrollment, rurality (living outside a metropolitan statistical area (MSA)), race/ethnicity (Black, Hispanic, White, other), ZIP code median income, social deprivation index (SDI), and social capital index); functional risk factors are frailty-related diagnoses, functional dependence, mental and behavioral health disorders, and potentially disabling conditions. For Study B MCBS analyses, social risk factors are rurality (living outside a metropolitan statistical area (MSA)), race/ethnicity (Black, Hispanic, White, other), marital status, education, language, living alone, private health insurance, home ownership, income, total assets, and social deprivation index; functional risk factors are activities of daily living, instrumental activities of daily living, general health status, and frailty-related diagnoses. MCBS=Medicare Current Beneficiary Survey.

C. FINDING 3: Although many organizations are working to improve equity by addressing social risk, which interventions are effective, replicable, and scalable remains unclear due to limited evaluation.

To reward and support better outcomes for beneficiaries with social risk factors, successful strategies need to be identified and disseminated. Many organizations are working to improve care for beneficiaries with social risk factors, but some interventions may be more effective than others. Although many submitters responding to ASPE's RFI described interventions to improve care for these beneficiaries, few of these interventions have been rigorously evaluated. The limited published evidence on the effectiveness and return on investment of certain interventions may be a starting point for organizations looking for new ways to improve care. However, evaluations of more and different types of interventions are still needed, including evidence on whether interventions are effective in different patient populations, across a range of organizations, and scaled to larger or smaller groups.

II. Recommendations

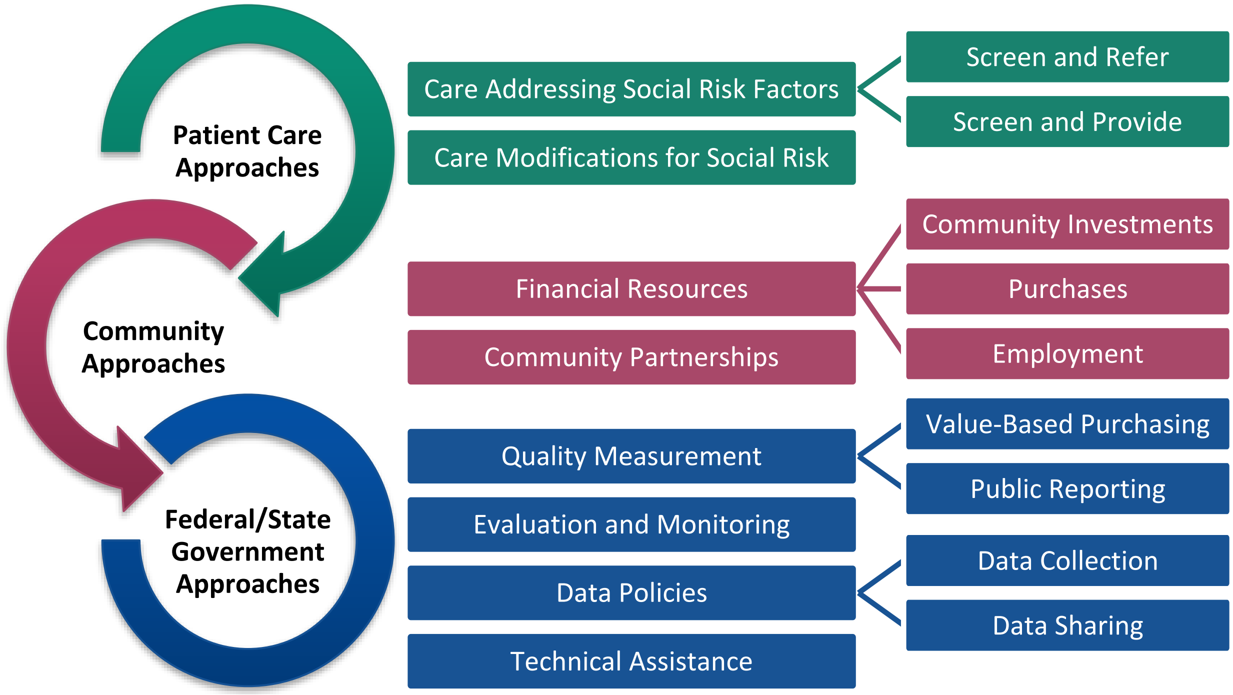
The recommendations included below build on the framework and considerations introduced in Study A and the policy questions introduced earlier for this Report. Recommendations are required by Congress in the IMPACT Act.

Policy questions:

1. Should some or all of Medicare's value-based purchasing programs account for social risk by adjusting measures and/or payment based on those measures?
2. Should HHS routinely collect more extensive and detailed data on beneficiaries' social risk factors than is currently available?
3. How can HHS achieve better outcomes for all Medicare beneficiaries by facilitating the ability of providers and communities to address social risk factors and integrate health and social services?

As discussed in the emerging areas section (Section 3 of this Report), addressing social risk factors and supporting better health outcomes will require connections between every level of the health system and the community (Figure 15.2). Providers can screen for social needs and refer beneficiaries to organizations to address those needs. Social needs may be better addressed through community collaborations, including referral networks and partnerships within and outside the health care system. Payers, including health plans and government agencies, can maintain social risk information about beneficiaries and fund infrastructure development to address social needs. At each of these levels, value-based care is an important tool to align incentives across the health care delivery system to address social needs.

Figure 15.2. Approaches for Health Care Systems to Invest in Addressing Social Risk



Adapted from: Gottlieb L, Fichtenberg C, Alderwick H, Adler N. Social Determinants of Health: What's a Healthcare System to Do? Journal of Healthcare Management 2019;64:243-57. doi:10.1097/jhm-d-18-00160.

A. A Comprehensive Strategy to Account for Social Risk in Medicare's VBP Programs

As Medicare's VBP programs mature, it is important to shift from modifying individual programs to adopting and implementing strategies that cut across all programs and health care settings. Quality reporting and VBP programs need to work in concert to create aligned incentives that drive providers to improve health outcomes for all beneficiaries. Thus, the recommendations in this Report apply to *all* of Medicare's quality reporting and VBP programs to create a comprehensive approach to account for social risk.

The recommendations in this Report build on the three-part strategy for accounting for social risk in Medicare's VBP programs (Figure 15.1) introduced in Study A. The strategy lays out a comprehensive approach to move towards programs that incentivize providers and plans to improve health outcomes by rewarding and supporting better outcomes for beneficiaries with social risk factors. This requires measuring and reporting quality by social risk (Strategy 1). Support is also needed to reward and support better outcomes for all beneficiaries, including those with social risk factors (Strategy 3). These two strategies provide support for providers to be held to the same high, fair quality standards for all beneficiaries (Strategy 2). As this strategy is realized, VBP and quality programs will need to align incentives for providers to improve care for socially at-risk beneficiaries. Rather than adjusting quality measures and VBP performance scores for social risk, this strategy focuses on supporting providers in addressing social risk (Strategy 3).

Although the recommendations are discussed in detail within each of the strategies, they are more likely to be successful if the recommendations across the strategies are implemented together as a comprehensive approach to addressing social risk in Medicare. For example, the recommendations for Strategy 2: Set High, Fair Quality Standards for All Beneficiaries discuss how to account for social risk in VBP measures and programs. The recommendations do not support adjusting outcome measures for social risk factors, nor do they support using peer groups for VBP performance score calculations. However, under the current VBP measures and programs, providers treating more socially at-risk beneficiaries may have worse performance and the recommendations for Strategy 2 alone do not address this disparity. Therefore, this comprehensive strategy directly addresses the disparity in outcomes by providing additional tools and resources to safety-net providers.

Changing VBP quality measures and performance scores alone, without providing incentives to improve health equity or additional tools and resources, is unlikely to improve care for socially at-risk beneficiaries. This comprehensive strategy seeks to respond to the third policy question evaluated in this Report, “How can HHS achieve better outcomes for all Medicare beneficiaries by facilitating the ability of providers and communities to address social risk factors and integrate health and social services?”

However, some of the key components needed to make this comprehensive strategy successful are not yet available. More work is needed to develop both health equity measures to reward providers for improving care for beneficiaries with social needs, as well as VPB payment adjustments and supplemental benefits to support providers’ efforts. Thus, the recommendations across the three strategies need to be implemented in phases.

Some of these recommendations could be implemented soon, while others require more development before implementation can proceed. For example, changes to measures’ medical risk adjustment methodology (Recommendation 2.1) could be implemented in the near future, as the indicators of functional risk assessed in this Report are already available. On the other hand, health equity measures or domains (Recommendations 1.3 and 2.2) are not yet readily available, and measure developers and endorsement organizations need to build such measures before they can be incorporated into VBP programs and replace current transitional approaches such as the categorical adjustment index (CAI). For this reason, implementing some of the recommendations in this Report requires more developmental work so that the Medicare program can implement a comprehensive approach to addressing social risk.

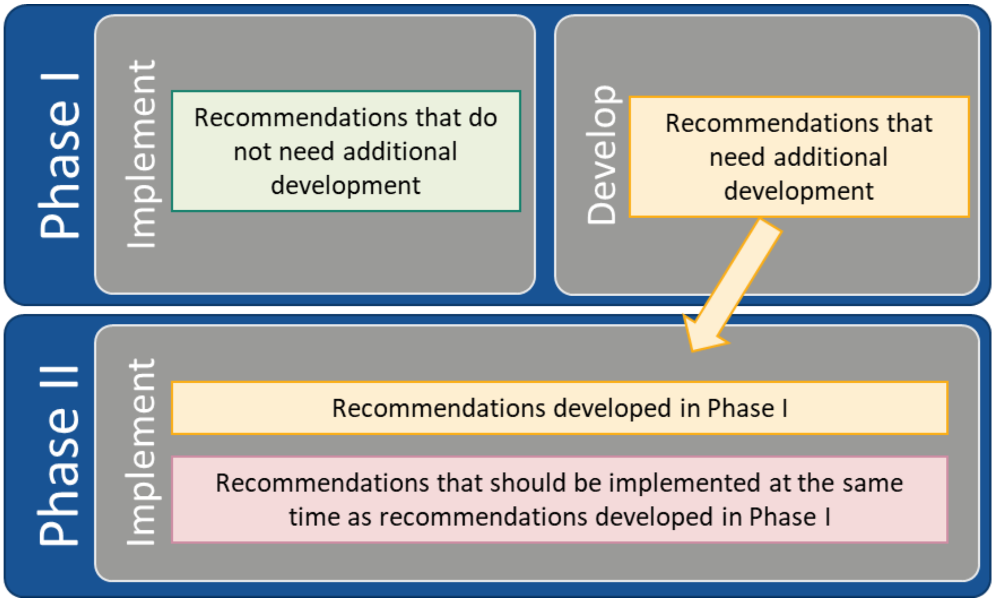
Some recommendations can be implemented alone, while others should be implemented together to achieve the policy goals described above. For instance, efforts to increase the sharing of social risk data across federal agencies and across the health and social service sectors at the local level (Recommendation 1.2) can proceed without the need to wait for other recommendations. On the other hand, implementing Recommendation 2.5 by removing peer grouping from the Hospital Readmissions Reduction Program (HRRP) and the CAI from the Medicare Advantage Star Ratings needs to be implemented along with additional actions to help providers achieve high quality outcomes for all beneficiaries. The goal of implementing these recommendations together is to hold all providers to the same high standards while giving providers additional tools and resources to help achieve these high standards. Additionally, this comprehensive approach calls for enhancing risk adjustment methodologies.

Without implementing these recommendations together, providers treating more socially at-risk beneficiaries would lose the current protections of peer grouping and the CAI. These actions and tools could include supplemental benefits and additional payment adjustments to providers (Recommendation 3.1), a standard risk adjustment framework that includes functional risk adjustment (Recommendation 2.1), or including health equity measures or domains in VBP programs (Recommendation 2.2). For example, it may be appropriate to remove peer grouping from the HRRP once the readmission measures use the standard risk adjustment framework that includes functional risk adjustment. As actions and tools to help providers achieve high-quality care for all beneficiaries are implemented, their impact on safety-net providers will need to be assessed, and further modifications may be necessary.

For these reasons, the recommendations included in this Report may be implemented in two phases (Figure 15.3).

- Phase 1: recommendations that are ready to be implemented independently in the first phase can begin now.
- Phase 2: recommendations that require further development can then be implemented in the second phase. Some recommendations do not require further development, but should be implemented in phase 2 at the same time as other recommendations that do require development, such as Recommendation 2.5 discussed above. Removal of peer grouping from programs should be implemented in the second phase, after actions and tools to help providers achieve high-quality care for all beneficiaries through one or more of the methods discussed above.

Figure 15.3. Implementation Phases



Note: Implementation phases including specific recommendations are presented in the summary section after the detailed recommendations.

B. Recommendations

Strategy 1: Measure and Report Quality for Beneficiaries with Social Risk Factors

This strategy includes collecting data on social risk and reporting quality measures by patient social risk to guide and encourage providers to identify and address patients' social needs and reduce health disparities. Separately reporting quality measures for those patients with and without social risk will facilitate measuring progress toward closing the gap in performance on quality measures between these two groups of patients.

Recommendation 1.1: HHS should support and inform the development of data collection and interoperability standards for social risk. CMS should explore ways to encourage providers to collect social risk information.

This recommendation addresses Congress' requirement that the Secretary make recommendations on obtaining access to social risk data.

Study A included the consideration "Consider enhancing data collection and developing statistical techniques to allow measurement and reporting of performance for beneficiaries with social risk factors on key quality and resource use measures." Since that time, there has been an increased focus on collecting and using beneficiary social risk information. However, there is still no consensus on how the data will be used, an important question that needs to be answered before data collection can be standardized. Deciding how data will be used will help to determine (1) which questions should be asked, and (2) how the responses should be documented. For each of these issues, there are opportunities to provide standards and/or to encourage data collection.

The choice of screening tool determines which questions will be asked. Currently numerous tools are widely used. The ideal screening tool depends on the planned use of social needs information. If the primary goal is to direct beneficiaries to services to address their social needs, providers need more detailed information to make appropriate referrals, implement interventions, and track resolution of needs over time. On the other hand, if social risk is used to risk adjust measures, payments, or population monitoring, less detail may be sufficient. Already, CMS has developed a social risk screening tool used in the Accountable Health Communities model and the social risk items proposed for the post-acute care screening tools.[10,11] These instruments are required for specific programs but could be used more broadly for the Medicare population. Alternatively, HHS could provide standards on which screening tool should be used but allow providers and plans to determine whether or not to use it to collect social risk information.

Knowing who needs information on the beneficiary's social risk also affects how the data should be documented. Here there are also various options worth considering. Currently, as noted earlier, social risk information can be captured in clinical documentation and/or in recording diagnosis codes. The federal government, state government, and health plans can most easily access information documented as a diagnosis codes in claims because claims are submitted to the payer for reimbursement. HHS may need additional social risk information for VBP program monitoring and evaluation.

For other health and social service providers, it may be easier to access information from clinical documentation, as providers may be able to share EHR information more easily than they can share claims. Yet if multiple parts of a single health system need the information, provider notes may be sufficient. However, different documentation methods may be ideal for different parts of the health care system. One solution may be to create "crosswalks" to translate social risk information from one format to another. Additionally, EHR captured data and/or diagnosis codes may need to be expanded to allow capture of more detailed social risk information. As with screening tools, HHS could provide standards for data documentation with or without encouraging providers and plans to document social risk factors.

HHS has developed data standards for documentation of some social risk information. The Office of the National Coordinator for Health Information Technology (ONC) included social, psychological, and behavioral standards in the 2015 health information technology certification criteria, providing interoperability standards (LOINC (Logical Observation Identifiers Names and Codes) and SNOMED CT (Systematized Nomenclature of Medicine—Clinical Terms)) for financial strain, education, social connection and isolation, and others.[12] ONC has also released a draft 2020-2025 Federal Health IT Strategic Plan for public comments, including an objective to integrate health and human services information.[13] Additional stakeholder efforts are underway to expand the availability to capture additional social determinants of health data elements for use and exchange. This includes the Gravity Project to identify and harmonize social risk factor data for interoperable electronic health information exchange for EHR fields as well as proposals to expand the ICD-10 (International Classification of Diseases, Tenth Revision) z-codes, the alphanumeric codes used worldwide to represent diagnoses.[14,15]

Recommendation 1.2: Federal and state agencies should consider policies regarding how and when to share social risk data across agencies. HHS should explore whether some social risk data can/should be shared at the local level between health and social service providers.

This recommendation addresses Congress' requirement that the Secretary make recommendations on obtaining access to social risk data.

In addition to, or even before, new social risk information is collected, existing information should be shared to reduce the burden of new data collection. This was discussed in the National Academies of Sciences, Engineering, and Medicine's (NASEM) report on data sources as well as in the submitted responses to ASPE's request for information on provider and health plan approaches to improving care for Medicare beneficiaries with social risk factors.[16] The NASEM report specifically identified data elements collected by the Social Security Administration, the Census Bureau, and Centers for Disease Control and Prevention's (CDC's) National Center for Health Statistics.

Such data sharing has been promoted by the bipartisan Commission on Evidence-based Policymaking's report and the Foundations for Evidence-Based Policymaking Act of 2018,[17,18] and these new developments are promising as improvements to the current state, in which sharing and linking data across agencies or departments within the federal government can be difficult and burdensome. For example, this Report intended to use Medicare beneficiaries' individual-level responses to the American Community Survey (ACS) and Medicare claims to evaluate the effect of the social risk factors available in the ACS on quality and resource use measures included in Medicare's value-based purchasing (VBP) programs. However, at the time of submission, the merged Medicare-ACS data were not yet available. A standard agreement across federal agencies that addresses confidentiality and security could make such data sharing smoother than the current process that requires each project to create a new agreement from scratch.

Within the Department, efforts have begun to understand the current state of data sharing across agencies, including an evaluation of challenges in doing so in the 2018 report "The State of Data Sharing at the U.S. Department of Health and Human Services" by the HHS's Office of the Chief Technology Officer. As these challenges are addressed to allow data sharing across the Department, the next logical step would be to expand this analysis to additional departments and identify and address challenges in data sharing across the federal, state, and local governments.

Beyond sharing current administrative data, the Department, including ONC, the Office for Civil Rights (OCR)—which enforces the Health Insurance Portability and Accountability Act (HIPAA) Privacy Rule—and the HHS Office of the Chief Technology Officer (CTO), should explore whether and how health and social service providers can share their social risk data. The necessity for and type of data to be shared would depend on the utility of the available data to providers and addressing any data security, privacy, or governance concerns for sharing and documentation. As data needs and uses will depend on the specific health and social service providers involved, these decisions should be made at the local level.

Recommendation 1.3: Quality reporting programs should include health equity measures.

This recommendation addresses Congress' requirements that the Secretary make recommendations on accounting for social risk in quality and resource use measures.

This recommendation also mirrors the second consideration in Study A: "Consider developing and introducing health equity measures or domains into existing payment programs to measure disparities and incent a focus on reducing them." Currently, no quality reporting programs explicitly include health equity measures that provide incentives to reduce health disparities. Including health equity measures can help providers prioritize areas for particular focus, and specific measures targeting equity within existing quality reporting programs can motivate a focus on reducing disparities and signal that health equity is an important component of delivery system transformation. These measures could also encourage providers to address health equity through service enhancements, patient engagement activities, and adoption of best practices to improve performance in this domain. Public reporting of health equity measures or domains would support monitoring of health disparities over time and help inform consumers' choice of providers.

Implementing this recommendation, however, will first require measure developers to create health equity measures. Health equity could be measured in various ways, including the difference in performance on particular measures between socially at-risk and other beneficiaries within a providers' population, comparing performance for socially at-risk populations across providers, or evaluating improvement in measure performance for a providers' socially at-risk population over time. One existing measure is the Health Equity Summary Score developed by CMS OMH.[19] The use of health equity measures in VBP programs is discussed in Recommendation 2.3.

Recommendation 1.4: Quality and resource use measures should be reported separately for dually enrolled beneficiaries and other beneficiaries.

This recommendation addresses Congress' requirement that the Secretary should make recommendations on how to account for social risk factors in quality and resource use measures.

This recommendation builds on the first consideration in Study A: "Consider enhancing data collection and developing statistical techniques to allow measurement and reporting of performance for beneficiaries with social risk factors on key quality and resource use measures." This Report also finds that dual enrollment is the strongest predictor of poor outcomes, and for that reason recommends stratifying reported measures by dual enrollment in quality reporting programs.

Since Study A was published, substantial progress has been made on stratified reporting of measures. Currently, CMS's Office of Minority Health (OMH) Mapping Medicare Disparities tool compares quality and resource use outcomes for dually enrolled and non-dually enrolled beneficiaries,[20] and CMS has begun providing hospitals with confidential reports of pneumonia readmission rates for dually enrolled compared to other beneficiaries.[21] These efforts could be expanded either by including additional measures or providers on OMH's Mapping Medicare Disparities tool or by adding stratified measures to CMS's compare websites (Hospital Compare, Nursing Home Compare, Home Health Compare, Dialysis Facility Compare, Long-Term Care Hospital Compare, Inpatient Rehabilitation Facility Compare, Physician Compare, Hospice Compare, and Medicare Plan Finder). This additional information could allow policy makers and providers to measure and track quality, outcomes, and costs for beneficiaries with social risk factors over time to reduce disparities and improve care for beneficiaries with social risk factors. However, adding stratified measures may be confusing, rather than helpful, for beneficiaries using these tools to select a provider. For that reason, it may be most appropriate to include these stratified measures on a separate data site rather than websites designed to help patients select high-quality providers.

Recommendation 1.5: Quality and resource use measures should *not* be adjusted for social risk factors for public reporting.

This recommendation addresses Congress' requirement that the Secretary should make recommendations on how to account for social risk factors in quality and resource use measures.

As discussed in Recommendation 1.4 above, stratified reporting is important to monitor disparities and improvements over time. However, in public reporting, it is also important to hold providers accountable for overall results, regardless of social risk. For this reason, quality and resource use measures should also be reported for a provider's overall population without adjustment for social risk.

Recommendation 1.6: Composite scores should *not* be adjusted for social risk factors for public reporting.

This recommendation addresses Congress' requirement that the Secretary should make recommendations on how to account for social risk factors in quality and resource use measures.

In addition to *not* to adjusting measures for social risk in public reporting (Recommendation 1.5), composite scores, such as star ratings, should *not* be adjusted for social risk factors. Composite scores used for public reporting should *not* use measures that are adjusted for social risk factors. They should also *not* use other methods to account for social risk, such as peer grouping.

Strategy 2: Set High, Fair Quality Standards for All Beneficiaries

This strategy aims to hold providers accountable to the same standards in VBP programs to improve care and health outcomes for all Medicare beneficiaries. It recognizes that beneficiaries with social risk factors may require more supports and resources to achieve the same outcomes. A standard, comprehensive risk-adjustment framework for all outcome and resource use measures, including functional risk factors, improves provider comparisons across measures.

Recommendation 2.1: Measure developers and endorsement organizations should create a standard risk-adjustment framework that includes functional risk for all risk-adjusted outcome and resource use measures used in Medicare programs.

This recommendation addresses Congress' requirements that the Secretary make recommendations on accounting for social risk in quality and resource use measures.

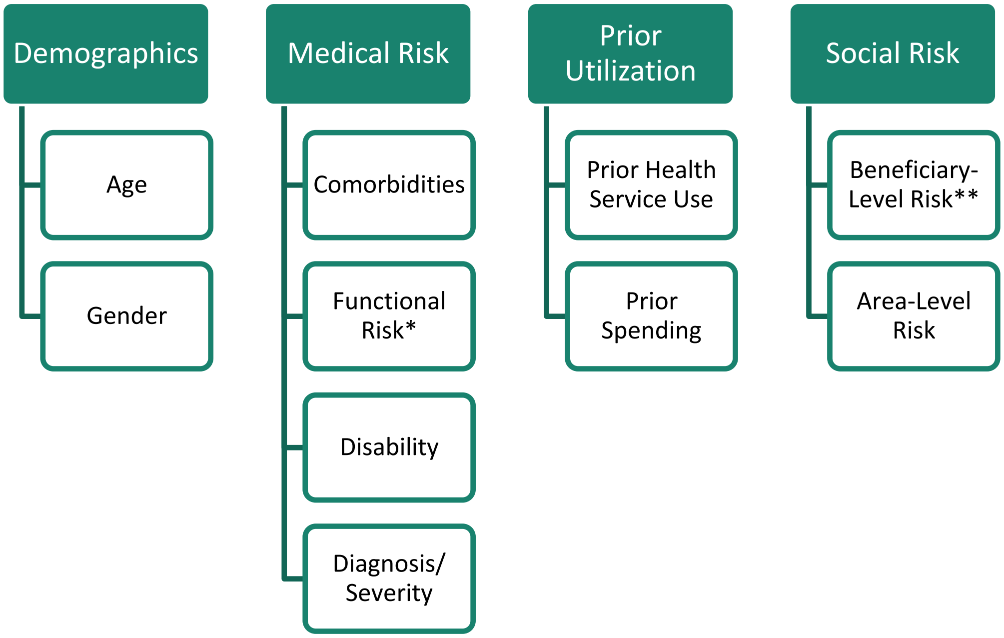
Measures used in VBP programs would benefit from a standard risk adjustment framework that sets a consistent policy for a number of reasons. First, the current lack of standardization across measures makes it difficult to accurately assess the role of social risk, as social risk is correlated with medical risk: both comorbidities and functional status. Thus, measures that include more medical risk adjustment are likely to see a smaller effect of social risk, making it difficult to compare and track disparities across measures and patient populations. Second, the use of different risk adjustment methods and factors make it difficult to compare performance across measures. If a provider does better on one measure than another, it may be due to differences in performance or differences in the measures' risk adjustment.

As discussed in Chapter 5, current outcome and resource use measures in Medicare's VBP programs use a variety of risk-adjustment methods and measures. These include different methods to adjust for medical risk such as comorbidities, functional risk adjustment, or reason for hospitalization (diagnosis). Some measures include social risk adjustment using the beneficiary-level risk factor of dual enrollment status. Despite the general consensus on the importance of medical risk adjustment, however, many measures currently used do not include functional risk adjustment. To fully account for differences in health status between beneficiaries, it is important for measure developers to follow a consistent policy across measures and to account for functional risk factors in *all* outcome and resource use measures' risk adjustment. One possible approach to account for functional risk factors using ICD codes is presented in this Report. Note that this recommendation does not apply to measures that do not use risk adjustment, such as process measures where the same process is expected for all beneficiaries.

Figure 15.4 illustrates the different factors that can potentially be used in risk adjustment and that should be considered for a standard risk-adjustment framework. Social risk factors are depicted in the figure's right column, but are not recommended to be included in the risk-adjustment of process or outcome measures. Demographics and medical risk adjustment are widely accepted as appropriate and important risk-adjustment factors. Some measures include prior utilization, but not all. Almost no measures at this time include social risk, except patient experience of care survey measures. Social risk factors are *not* recommended for the standard, clinical risk-adjustment model. Recommendations 2.3-2.5 discuss the appropriateness of adjusting for social risk by type of measure.

As discussed in more detail in this Report's introductory chapters, the appropriate risk-adjustment approach may depend on the planned use of the measure (i.e., public health surveillance, population health management, quality improvement, quality reporting, VBP, or program evaluation). The standard risk-adjustment framework as suggested by this recommendation may need to specify different risk-adjustment methods for different uses (i.e., standardized age/gender adjusted outcomes for population health management, clinically risk-adjusted quality measures stratified by patient subgroups for quality reporting, etc.).

Figure 15.4. Potential Risk-Adjustment Variables



*This Report includes the recommendation to include functional risk in the standard risk adjustment framework.
**This Report includes the recommendations to adjust resource use and patient experience measures for dual enrollment status as a beneficiary-level social risk factor, but *not* to adjust quality process or outcome measures for social risk.
Note: This Report does not include specific recommendations for other potential risk adjustment variables.

Recommendation 2.2: Value-based purchasing programs should include health equity measures and/or domains.

This recommendation addresses Congress' requirements that the Secretary make recommendations on accounting for social risk in quality and resource use measures and in determining payment adjustments based on these measures.

This recommendation is similar to recommendation 1.3, but focuses on the use of health equity measures in VBP programs rather than quality reporting programs. Currently, no VBP programs explicitly include health equity measures that provide incentives to reduce health disparities, although the Merit-based Incentive Payment System (MIPS) program does include some optional health equity activities in the improvement activities performance category. As with public reporting of health equity measures, including health equity measures in VBP programs can help providers prioritize areas for particular focus, help providers focus on reducing disparities, and signal that health equity is an important component of delivery system transformation. Once health equity measures are developed for public reporting, they can be included in existing VBP programs as allowed by statute.

Recommendation 2.3: Resource use and patient experience measures should adjust for social risk factors in VBP programs.

This recommendation addresses Congress' requirements that the Secretary make recommendations on accounting for social risk in quality and resource use measures.

1. A framework for considering social risk adjustment by type of measure

As discussed above in Recommendation 2.1, measures used in VBP programs would benefit from a standard risk adjustment framework that sets a consistent policy. Polices could be established across all types of measures or separately for each type (process, outcome, patient experience, and resource use).

One solution that has been advocated for accounting for social risk in Medicare's VBP programs is adding social risk factors to all measures' risk adjustment to "level the playing field." The appeal of this approach is that it recognizes the greater challenges that may be faced in achieving the same outcomes for beneficiaries with social risk factors and may reduce the likelihood that concerns about performance could worsen access to care for these groups. Such considerations are particularly appropriate in situations in which measure performance is closely tied to social risk, and the consequences of this risk on outcomes are truly beyond providers' control, making the benefits of adjustment outweigh the drawbacks. In this case, it would still be important for VBP programs to include incentives for providing high-quality care for socially at-risk beneficiaries in other ways, such as including health equity measures or domains as discussed in Strategy 1 above.

Alternatively, risk-adjustment policies could be developed by type of measure, in conjunction with a set of criteria on the appropriateness of risk-adjustment.

As described in Chapter 5, measures are *less* appropriate for social risk adjustment if:

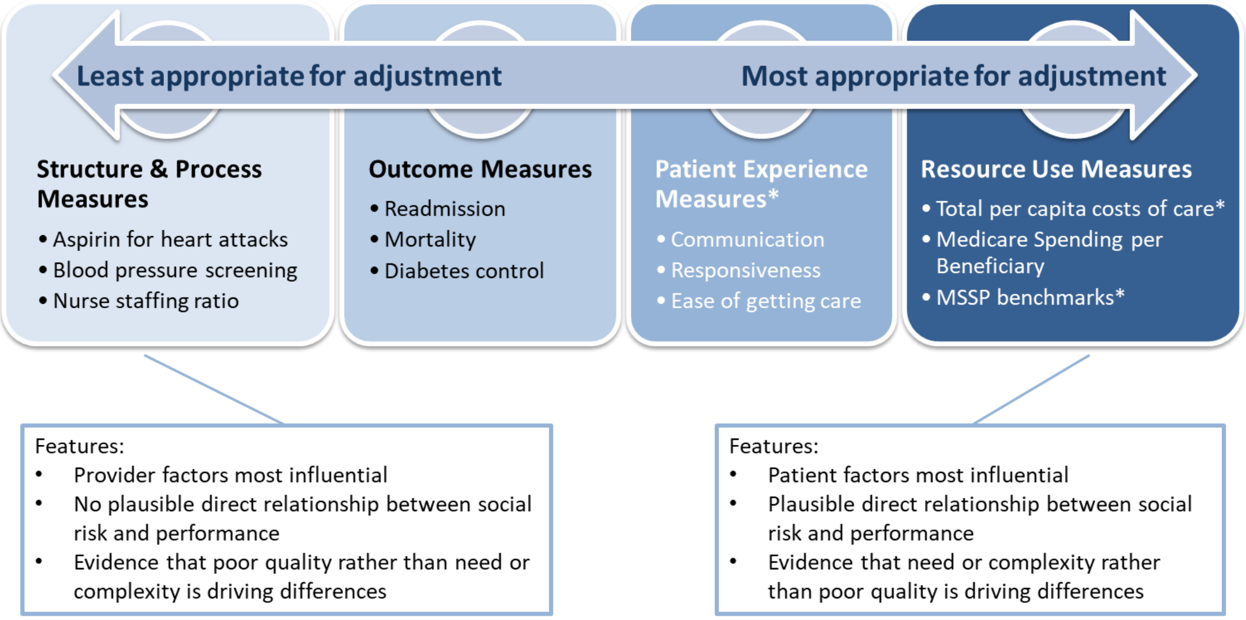
1. They are predominantly under the control of the provider,
2. There is no plausible direct relationship between the social risk factor and the outcome, and
3. There is evidence that provider bias, rather than patient need or complexity, is driving differences in performance.

Measures are *more* appropriate for social risk adjustment if the differences in outcomes or utilization are:

1. Predominantly related to patient factors,
2. If there is a plausible direct relationship between the social risk factor and the outcome, and
3. If there is evidence that patient need or complexity, rather than provider performance, is driving differences in performance.

Given that the role of social risk varies by type of measure, the appropriateness of adjusting measures for social risk may be better considered along a continuum, as shown in Figure 15.5.

Figure 15.5. Considerations for Adjusting Quality and Resource Use Measures for Social Risk by Measure Type



Features:
- Provider factors most influential
- No plausible direct relationship between social risk and performance
- Evidence that poor quality rather than need or complexity is driving differences

Features:
- Patient factors most influential
- Plausible direct relationship between social risk and performance
- Evidence that need or complexity rather than poor quality is driving differences

*=measure currently adjusted for social risk factor(s)

Note: MSSP=Medicare Shared Savings Program.

2. Adjust resource use measures for social risk to recognize more resources may be needed to achieve same outcomes

To account for the fact that it may require additional resources to achieve the same high quality care for socially at-risk beneficiaries, *all* resource use measures should adjust for social risk. In order to provide a consistent governing principle, all resource use measures should adjust for social risk. Some current resource use measures adjust for social risk, including the MIPS total per capita cost measure, which adjusts for the HCC (hierarchical condition category) risk score that in turn includes dual-enrollment status. Others, such as the Medicare Spending per Beneficiary measure, do not adjust for dual-enrollment status, even though the analyses in this Report find that dually enrolled beneficiaries have higher episode spending driven primarily by greater use of institutional and community-based post-acute care to meet their greater medical and social needs.

To provide consumers with information on the care that they should expect to receive, however, measures should *not* be adjusted for social risk in public reporting programs, but instead reported for dually enrolled beneficiaries and other beneficiaries separately as described in Recommendation 1.4.

3. Adjust patient experience measures for social risk to account for response tendencies

Patient experience measures, such as those collected by the CMS Consumer Assessment of Healthcare Providers and Systems (CAHPS) surveys, are currently adjusted for social risk using factors such as education, dual enrollment, and language.[22] These adjustments seek to account for differences in response tendencies associated with social risk factors, rather than differences in the quality of care provided.[23,24] For example, individuals with less education and those who report better general and mental health provide more positive ratings and reports of care than others in the same health insurer contracts.[22] In order to accurately assess the care provided and compare patients' experiences, these measures should continue to adjust for social risk factors.

Recommendation 2.4: Process and outcome measures should *not* be adjusted for social risk in value-based purchasing programs.

This recommendation addresses Congress' requirements that the Secretary make recommendations on accounting for social risk in quality and resource use measures.

Although Recommendation 2.3 recommends risk adjusting patient experience and resource use measures for social risk, for other types of measures, the drawbacks of adjusting for social risk are considerable for both process and outcome measures.

1. Process measures should *not* be adjusted for social risk

First, there are many quality measures for which there is no plausible role for any type of risk adjustment. Pure process measures such as giving aspirin for a heart attack, for example, are primarily under providers' control, and should be done regardless of a beneficiary's social risk profile. Second, adjusting the process of care quality measures risks masking disparities, potentially reducing the long-term ability to identify and reduce them. Third, adjusting quality measures may have a negative impact on transparency for consumers. Finally, to the degree that differences in measures reflect actual differences in provider performance, adjusting the measures directly could excuse the delivery of differential care to beneficiaries with social risk factors. For these reasons, process measures should *not* be adjusted for social risk factors.

2. Outcome measures should *not* be adjusted for social risk

In terms of appropriateness for adjusting for social risk, outcome measures fall in the middle of the spectrum shown in Figure 15.5 above. For many outcome measures, the provider has some control in the care given in the care setting, but outcomes are assessed at some point after the health care encounter. With 30-day readmissions, for example, providers can improve outcomes for socially at-risk beneficiaries through discharge planning, follow-up care, referrals for social services, and building relationships with community-based organizations. To hold all providers accountable to the same, high standards for all beneficiaries, therefore outcome measures should *not* be adjusted for social risk.

Because achieving the same high-quality outcomes may be more difficult for socially at-risk beneficiaries than for other beneficiaries, it is important to assist providers in achieving these high-quality outcomes for all beneficiaries. Rather than risk adjusting outcome measures for social risk to avoid VBP payment adjustments for worse outcomes for socially at-risk beneficiaries, programs should provide support in other ways. This could include additional payments or bonuses to safety-net providers. Although they are for different purposes, there are already existing payments and bonuses that target safety-net providers, including the current DSH payments and the bonus points for small practices and practices with a higher share of medically and socially complex patients in the MIPS program. It could also include sharing best practices. Both of these recommendations are discussed in Strategy 3 below. To provide consumers with information on the care that they should expect to receive, moreover, measures should also *not* be adjusted for social risk in public reporting programs, but instead reported for dually enrolled beneficiaries and other beneficiaries separately as described in Recommendation 1.4.

Recommendation 2.5: Value-based purchasing programs should *not* use peer grouping or categorical adjustments for social risk factors. Where these adjustments are currently in place, they should be removed when additional actions and tools are implemented to help providers achieve high-quality care for all beneficiaries.

This recommendation addresses Congress' requirements that the Secretary make recommendations on determining payment adjustments in VBP programs.

In addition to *not* adjusting process or outcome measures (Recommendation 2.4), VBP performance scores should *not* be adjusted for social risk factors. This recommendation applies to using peer grouping to assign VBP payment adjustments, such as in the HRRP, and other methods like the CAI used in the MA Star Ratings program. Similar to the arguments against adjusting quality measures for social risk presented in Recommendation 2.4 above, peer grouping establishes different quality standards across providers. Under peer grouping, providers who serve more socially at-risk beneficiaries may avoid negative payment adjustments, even though they may have lower scores compared to providers with fewer socially at-risk beneficiaries. Instead, safety-net providers should have additional tools and resources to help them achieve high-quality outcomes for all beneficiaries, as discussed in Strategy 3 below. These additional tools and resources should be available for all providers that treat a large proportion of socially at-risk beneficiaries, regardless of their performance on specific measures or programs. For example, peer grouping compares performance across similar providers rather than all providers, but is still dependent on an individual provider's performance. Bonus points in a VBP program, on the other hand, provide additional resources to all safety net providers, regardless of their performance. For that reason, bonus points in VBP programs are appropriate as additional tools and resources, while peer grouping or the CAI are not. Once these additional actions, tools, and resources are available, approaches such as peer grouping or the CAI should be removed from VBP programs.

Strategy 3: Reward and Support Better Outcomes for Beneficiaries with Social Risk Factors

This strategy recognizes that providing additional supports and resources is foundational to address beneficiaries' social risk in order to improve care and outcomes. Such additional supports may include sharing best practices through learning networks and encouraging medical providers to build links with social service providers. Additional resources to meet beneficiaries' social needs may be made available through alternative payment models, supplemental benefits that address social needs, or additional payments. Targeted payments to support providers' efforts to address social risk factors may also be made through VBP incentive payments.

Recommendation 3.1: CMS should continue to support providers and plans addressing social risk factors through models, supplemental benefits, and VBP payment adjustments. HHS should continue to develop approaches to address beneficiaries' social needs. Additional research is needed on best practices for providing care to socially at-risk beneficiaries. Best practices, once identified, need to be scaled.

This recommendation addresses Congress' requirement that the Secretary should make recommendations on how to account for social risk factors in determining payment adjustments based on quality and resource use measures.

It is clear that simply adjusting measures does not fully address the tough, real problems underlying the pervasive differences in performance across measures and programs that were examined in this Report. Social risk factors are powerful, and to truly begin to "solve" the problem by making things better for beneficiaries with social risk factors and the providers who serve them, these factors need to be explicitly recognized and addressed. This recommendation to support providers and plans addressing social risk factors goes hand-in-hand with Recommendations 2.3-2.5 focusing on risk adjustment and other methods for accounting for social risk in Medicare's VBP programs. This Report recommends adjusting resource use and patient experience, but *not* process or outcome measures, for social risk. However, achieving the same high-quality outcomes may be more difficult for socially at-risk beneficiaries than for other beneficiaries. It is important to assist providers in achieving these high-quality outcomes for all beneficiaries with the resources (through models, supplemental benefits, and VBP payment adjustments) and tools (such as best practices) to achieve these outcomes.

Currently, Medicare provides payment adjustments for providers treating socially at-risk beneficiaries in some settings but not others (see table in the appendix to this chapter). Specifically, Medicare provides DSH payments to hospitals treating a large proportion of dually enrolled beneficiaries as required by

Congress, and has used administrative authority to provide bonus points for practices with a higher proportion of socially complex patients in the MIPS program. Although the recommendation that outcome measures should *not* be adjusted for social risk encourages providers to achieve the same high-quality outcomes for socially at-risk beneficiaries as their other patients, it is important to recognize that achieving these outcomes may require more resources for socially at-risk beneficiaries. Without additional payment adjustments, providers have reported that they may be disincentivized to treat socially at-risk beneficiaries, jeopardizing access to care.

CMS should also support providers and plans working to address beneficiaries' social needs through supplemental benefits. New flexibilities in the Medicare Advantage (MA) program will allow health plans to provide supplemental benefits that are not necessarily health-related but have a reasonable expectation of improving or maintaining the health or overall function (including benefits that secondarily address social risk factors), but these benefits are only available to beneficiaries with chronic conditions enrolled in MA plans.[43] Although a small percentage of plans are offering these new supplemental benefits in the first year available, interviews with MA plans before these new flexibilities were implemented found that plans were considering a variety of approaches, including screening beneficiaries for social needs and referring to community organizations to address those needs ("screen and refer"), and screening for social needs and directly providing services to address the needs identified ("screen and provide").[25,26] As these flexibilities are implemented, it will be important for MA plans and others to evaluate the extent to which any supplemental benefits address Medicare beneficiaries' social needs and impact quality and resource use measures.

Finally, knowledge about best practices to address beneficiaries' social risk is an important tool for achieving high quality outcomes for all beneficiaries. As evidenced by the responses to ASPE's RFI, providers and health plans are already implementing numerous interventions to address beneficiaries' social risks. Within HHS, a number of agencies including CMS, the Administration for Community Living (ACL), the Substance Abuse and Mental Health Services Administration (SAMHSA), and the Administration for Children and Families (ACF), work to address social risk factors. States in the Medicaid program are also taking various steps to address beneficiaries' social needs. However, the evaluations of these approaches are not yet mature, making it difficult for organizations wanting to adopt new interventions to choose effective approaches. HHS, through CMS's Innovation Center, has begun to develop and evaluate new models to address social risk and should continue to do so. For example, the current Accountable Health Communities model and evaluation will help to build the knowledge base about effective interventions, along with findings from evaluations of state models.[27,28] Additional models including incentive payments or alternative payment structures to address beneficiaries' social needs should be developed under various authorities to allow best practices to be identified, tested, disseminated broadly, and scaled.

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[43] The Bipartisan Budget Act of 2018 (Public Law No. 115-123) amended section 1852(a) of the Social Security Act to expand the types of supplemental benefits that may be offered by MA plans to chronically ill enrollees. These include supplemental benefits that are not primarily health related and may be offered non-uniformly to eligible chronically ill enrollees.

Recommendation 3.2: Learning networks, such as Quality Improvement Organizations (QIOs), should share best practices across providers.

This recommendation addresses the policy question of how the federal government can facilitate the ability of health plans, providers, and communities to address social risk factors and integrate health and social services.

This recommendation to share best practices across providers goes hand-in-hand with Recommendations 2.3-2.5 focusing on risk adjustment and other methods for accounting for social risk in Medicare's VBP programs. This Report recommends adjusting resource use and patient experience measures, but *not* process or outcome measures, for social risk. However, achieving the same high-quality outcomes may be more difficult for socially at-risk beneficiaries than for other beneficiaries. It is important to assist providers in achieving these high-quality outcomes for all beneficiaries with resources and tools, such as best practices, to achieve these outcomes.

As more interventions are evaluated and the evidence of the effectiveness of different approaches grows, it is important to share this knowledge across the health care system. Currently, Quality Innovation Network Quality Improvement Organizations (QIN-QIOs) have an opportunity to identify and disseminate effective practices across providers.[29]

Recommendation 3.3: HHS should encourage medical providers and plans to build links with social service providers to better address beneficiaries' social needs.

This recommendation addresses the policy question of how the federal government can facilitate the ability of health plans, providers, and communities to address social risk factors and integrate health and social services.

VBP programs provide incentives for medical providers and plans to build relationships with social service providers. Current chronic-care management services, paid for by Medicare in addition to office visits, include coordinating community and social services for beneficiaries with multiple chronic conditions.[30] Nonetheless, one of the common themes in the submitted responses to ASPE's RFI was the difficulty of coordinating social and medical services. Although non-profit hospitals are currently required to conduct community-needs assessments and provide community benefits, there is much more than can be done.[31] Health care providers can screen for social needs and refer beneficiaries to organizations that can address those needs. However, many RFI respondents brought up challenges to this "screen and refer" approach. These included challenges in maintaining an up-to-date directory of social service providers, understanding eligibility criteria for different services, "closing the loop" after a referral is made to find out whether services were actually received, and the capacity of social services to meet beneficiaries' needs. Some providers and plans are going beyond "screen and refer" to "screen and provide" by providing services, such as food or housing, in concert with community organizations.

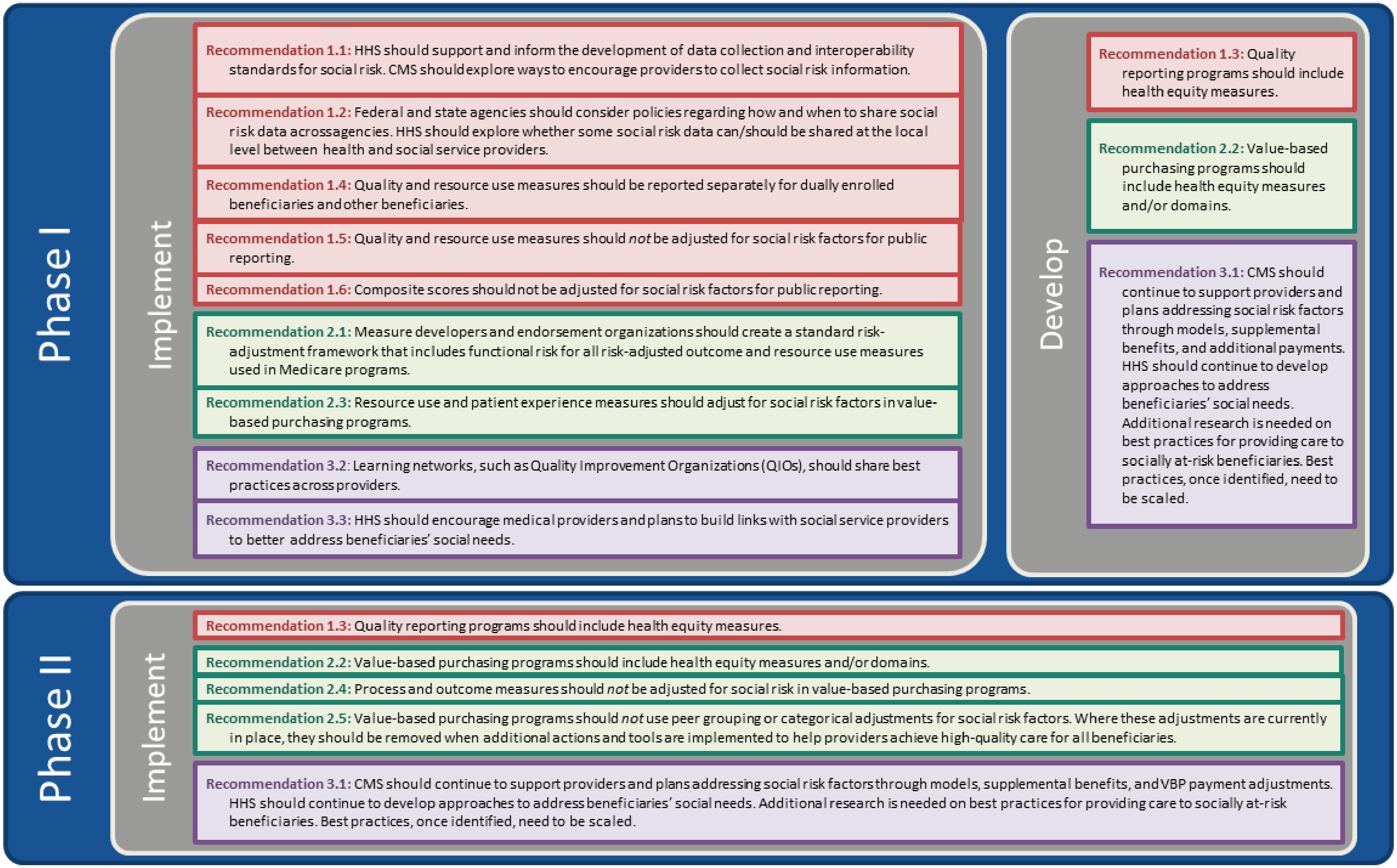
Better coordination between medical and social service providers could reduce these challenges. Specifically, HHS could encourage more community relationships through some of the recommendations above, such as developing data collection/interoperability standards, developing and testing new models for addressing social risk, and working with providers to evaluate and disseminate best practices for addressing the social needs of beneficiaries through home and community based services and social supports.

C. Summary of Recommendations

The comprehensive approach to addressing social risk in Medicare's VBP programs introduced above can be implemented in phases depending on the amount of development needed for each recommendation, as discussed earlier. Some recommendations can be implemented alone, while others should be implemented together to achieve the policy goals. For instance, implementing Recommendation 2.5 by removing peer grouping from the Hospital Readmissions Reduction Program (HRRP) and the CAI from the Medicare Advantage Star Ratings needs to be implemented along with additional actions and tools to help providers achieve high quality outcomes for all beneficiaries, such as adjustments to supplemental benefits and additional adjustments in payments to providers (Recommendation 3.1), a standard risk adjustment framework that includes functional risk adjustment (Recommendation 2.1), or including health equity measures or domains in VBP programs (Recommendation 1.3).

For these reasons, the recommendations included in this Report may be implemented in two phases. Potential timing for implementing each recommendation is shown in Figure 15.6.

Figure 15.6. Implementation Phases for Recommendations



Phase I

Implement

Recommendation 1.1: HHS should support and inform the development of data collection and interoperability standards for social risk. CMS should explore ways to encourage providers to collect social risk information.

Recommendation 1.2: Federal and state agencies should consider policies regarding how and when to share social risk data across agencies. HHS should explore whether some social risk data can/should be shared at the local level between health and social service providers.

Recommendation 1.4: Quality and resource use measures should be reported separately for dually enrolled beneficiaries and other beneficiaries.

Recommendation 1.5: Quality and resource use measures should *not* be adjusted for social risk factors for public reporting.

Recommendation 1.6: Composite scores should not be adjusted for social risk factors for public reporting.

Recommendation 2.1: Measure developers and endorsement organizations should create a standard risk-adjustment framework that includes functional risk for all risk-adjusted outcome and resource use measures used in Medicare programs.

Recommendation 2.3: Resource use and patient experience measures should adjust for social risk factors in value-based purchasing programs.

Recommendation 3.2: Learning networks, such as Quality Improvement Organizations (QIOs), should share best practices across providers.

Recommendation 3.3: HHS should encourage medical providers and plans to build links with social service providers to better address beneficiaries' social needs.

Develop

Recommendation 1.3: Quality reporting programs should include health equity measures.

Recommendation 2.2: Value-based purchasing programs should include health equity measures and/or domains.

Recommendation 3.1: CMS should continue to support providers and plans addressing social risk factors through models, supplemental benefits, and additional payments. HHS should continue to develop approaches to address beneficiaries' social needs. Additional research is needed on best practices for providing care to socially at-risk beneficiaries. Best practices, once identified, need to be scaled.

Phase II

Implement

Recommendation 1.3: Quality reporting programs should include health equity measures.

Recommendation 2.2: Value-based purchasing programs should include health equity measures and/or domains.

Recommendation 2.4: Process and outcome measures should *not* be adjusted for social risk in value-based purchasing programs.

Recommendation 2.5: Value-based purchasing programs should *not* use peer grouping or categorical adjustments for social risk factors. Where these adjustments are currently in place, they should be removed when additional actions and tools are implemented to help providers achieve high-quality care for all beneficiaries.

Recommendation 3.1: CMS should continue to support providers and plans addressing social risk factors through models, supplemental benefits, and VBP payment adjustments. HHS should continue to develop approaches to address beneficiaries' social needs. Additional research is needed on best practices for providing care to socially at-risk beneficiaries. Best practices, once identified, need to be scaled.

In particular, Recommendations 1.5, 1.6, 2.3, 2.4, and 2.5 address how to account for social risk in measures and programs, including both VBP programs and quality reporting programs.

Table 15.3. Recommendations: Whether to Adjust for Social Risk Factors by Type of Measure and Program

Measure Type	Whether to Adjust for Social Risk Factors	
	Quality Reporting Programs	VBP Programs
Process Measures	**No**	**No**
Outcome Measures	**No**	**No**
Patient Experience Measures	**Yes**	**Yes**
Resource Use Measures	**No**	**Yes**
Program Performance Scores	**No**	**No**

Note: VBP=value-based purchasing.
“No” indicates a recommendation *not* to adjust for social risk factors.
“Yes” indicates a recommendation to adjust for social risk factors.

III. Summary

Table 15.4. Summary of Strategies, Main Findings, and Recommendations

Strategy		
Measure and Report Quality for Beneficiaries with Social Risk Factors	**Set High, Fair Quality Standards for all Beneficiaries**	**Reward and Support Better Outcomes for Beneficiaries with Social Risk Factors**
Main Findings		
Beneficiary social risk information is not routinely or systematically collected across the health care system, and there is not always standardized terminology to capture beneficiary social risk information.	After accounting for additional social and functional risk factors, dual-enrollment status remains a powerful predictor of poor outcomes on some quality and resource use measures in Medicare's VBP programs. Functional status is also a powerful predictor of poor outcomes on some measures but is not always included in measure risk adjustment.	Although many organizations are working to improve equity by addressing social risk, which interventions are effective, replicable, and scalable remains unclear due to limited evaluation.
Recommendations		
1.1. HHS should support and inform the development of data collection and interoperability standards for social risk. CMS should explore ways to encourage providers to collect social risk information. 1.2. Federal and state agencies should consider policies regarding how and when to share social risk data across agencies. HHS should explore whether some social risk data can/should be shared at the local level between health and social service providers. 1.3. Quality reporting programs should include health equity measures. 1.4. Quality and resource use measures should be reported separately for dually enrolled beneficiaries and other beneficiaries. 1.5. Quality and resource use measures should *not* be adjusted for social risk factors for public reporting. 1.6. Composite scores should *not* be adjusted for social risk factors for public reporting.	2.1. Measure developers and endorsement organizations should create a standard risk-adjustment framework that includes functional risk for all risk-adjusted outcome and resource use measures used in Medicare programs. 2.2. Value-based purchasing programs should include health equity measures and/or domains. 2.3. Resource use and patient experience measures should adjust for social risk factors in VBP programs. 2.4. Process and outcome measures should *not* be adjusted for social risk in VBP programs. 2.5. Value-based purchasing programs should not use peer grouping or categorical adjustments for social risk factors. Where these adjustments are currently in place, they should be removed when additional actions and tools are implemented to help providers achieve high-quality care for all beneficiaries.	3.1. CMS should continue to support providers and plans addressing social risk factors through models, supplemental benefits, and VBP payment adjustments. HHS should continue to develop approaches to address beneficiaries' social needs. Additional research is needed on best practices for providing care to socially at-risk beneficiaries. Best practices, once identified, need to be scaled. 3.2. Learning networks, such as Quality Improvement Organizations (QIOs), should share best practices across providers. 3.3. HHS should encourage medical providers and plans to build links with social service providers to better address beneficiaries' social needs.

CMMI=Center for Medicare and Medicaid Innovation; CMS=Centers for Medicare and Medicaid Services; HHS=U.S. Department of Health and Human Services; QIO=Quality Information Organization; IT=information technology; VBP=value-based purchasing.

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