## Attachment 1 – Public Comment Submission, March 4, 2025

Indiana Family and Social Services Administration

Indiana Family and Social Services Administration (FSSA) has been collaborating with Medicare Advantage (MA) Dual Eligible Special Needs Plans (D-SNPs) over the past 5 years to enhance the D-SNP Model of Care (MOC) toward integrated care and enhanced access to home and community based services (HCBS). Each year Indiana FSSA has added state specific MOC requirements under the State Medicaid Agency Contract (SMAC) to achieve these goals through Coordination Only D-SNPs as Indiana moves toward fully integrated dual eligible (FIDE) plans in 2026.[1] Although the current and proposed worthy changes to the CMS MOC requirements provide a comprehensive framework for delivery of integrated care, specific requirements for care coordination and integration are limited. The purpose of this public comment on the CMS MOC requirements is to share some of Indiana's state specific MOC requirements supported by scientific evidence and aimed at delivering effective care coordination and achieving greater integration of medical care and social services particularly for high-need patients. Indiana's MOC requirements are based on attributes of care models demonstrated to be successful in achieving a better care experience, improved quality and outcomes, and lower costs.[2-4] Indiana's requirements are also intended to have a greater impact than observed to date for D-SNPs on reducing avoidable healthcare utilization and facilitating the ability of individuals to live in community-based settings.[5]

Recommendations for new language to be added to D-SNP MOC requirements:

1) MOC Element 1A: Require ED visit, hospital observation stay, and hospital admission rates; and hospital 30-day readmission rates be included in the description of SNP population and most vulnerable.
2) MOC Element 1A: Require inclusion of subsets of members enrolled in HCBS 1915c waiver (or similar nursing facility level of care members) and those members with a diagnosis of dementia (identified using ICD-10 codes) as "most vulnerable".
3) MOC Elements 1B and 2D: Require a designated longitudinal D-SNP care coordinator for each member identified as "most vulnerable".
4) MOC Element 2C: Require for "most vulnerable enrollees" a face-to-face encounter by the designated care coordinator.
5) MOC Element 2D: Require the HCBS 1915c waiver service plan to be incorporated into the Individualized Care Plan of these members.
6) MOC Element 2E: Require the HCBS 1915c waiver service coordinator to be incorporated into the Interdisciplinary Care Team (ICT) for these members.
7) MOC Element 2E: Add "including HCBS and behavioral health" to D-SNP explanation of "how ICT coordinates with Medicaid providers when there are needed Medicaid-covered medical or social services that the plan does not cover, if applicable".
8) MOC Element 2F: Require the designated longitudinal care coordinator to serve as point of contact for care transitions of members identified as "most vulnerable enrollees".
9) MOC Element 2F: Add "including HCBS and behavioral health" to D-SNP explanation of "how the plan coordinates with providers of any Medicaid covered services during a care transition, where applicable".

Footnotes

[1] **Attachment 2** Indiana D-SNP MOC Requirements Checklist

[2] **Attachment 3** Effective Care for High Need Patients – Opportunities for Improving Outcomes, Value, and Health, National Academies of Medicine, 2017.

[3] **Attachment 4** Models of Care for High-Need, High-Cost Patients: An Evidence Synthesis, The Commonwealth Fund, 2015.

[4] **Attachment 5** The 'GRACE' Model: In-Home Care Leads to Better Care for Dual Eligibles, *Health Affairs*, 2011.

[5] **Attachment 6** Differences in Healthcare Utilization Between Enrollees of Fully Integrated Dual Eligible Special Needs Plans Versus Non-Fully Integrated Plans, *Journal of the American Geriatrics Society*, 2024.

**Indiana FSSA D-SNP Model of Care (MOC) Requirements**
**2026 SMAC MOC Checklist** (Red Font, new from 2025)

| Indiana FSSA Requirement | Page | Notes |
|---|---|---|
| **MOC 1: Description of SNP Population (General Population)** | | |
| **Element A: Description of Overall SNP Population**<br>**Factors 1-4.** | | |
| Detailed description of MAO's Indiana DE population by PBP: PathWays, Full Duals, and Partial Duals. | | |
| **Element B: Subpopulation – Most Vulnerable Beneficiaries**<br>**Factors 1-4.** | | |
| Detailed description of MAO's Indiana subpopulation of members the State has designated as vulnerable:<br>• PathWays Waiver<br>• Health and Wellness (H&W) Waiver – High Risk<br>• Money Follows the Person (MFP) – High Risk<br>• Diagnosis of Dementia<br>• SMI Diagnosis[1]<br>[1] SMI groupings and diagnoses common to CMS and Indiana:<br>✓ F20 Schizophrenia<br>✓ F25 Schizoaffective disorder<br>✓ F31 Bipolar disorder<br>✓ F33._ Major depressive disorder, recurrent. | | |

**Indiana FSSA D-SNP Model of Care (MOC) Requirements**
**2026 SMAC MOC Checklist (**Red Font, new from 2025)

| Indiana FSSA Requirement | Page | Notes |
|---|---|---|
| **MOC 2: Care Coordination** | | |
| **Element A: SNP Staff Structure**<br>**Factor 5. Describe MOC Staff Training** | | |
| Provide the following initial and annual training content and strategies for D-SNP care managers/care coordinators:<br>a) Indiana PathWays for Aging and PathWays Waiver;<br>b) Health and Wellness Waiver including Service Coordination;<br>c) Behavioral health services covered by Medicare[2] and Medicaid[3];<br>d) Aging Network (AAAs/ADRCs) and HCBS Services;<br>e) The 4Ms (What Matters, Mentation, Medications, Mobility);<br>f) "What Matters" and advance directives;<br>g) Dementia care and provision of caregiver education;<br>h) Informal caregiver engagement and support; and<br>i) Risk assessment and prevention of falls.<br>[2] Medicare including Intensive Outpatient Program and Partial Hospital Program.<br>[3] Medicaid including Medicaid Rehabilitative Option, Behavioral Primary Health Coordination, and Certified Community Behavioral Health Clinic. | | |
| **Element B: Health Risk Assessment Tool (HRAT)**<br>**Factor 1. Conduct Initial and Annual HRA Assessments** | | |
| Use verbatim the five SDOH questions required by the State and incorporate in the HRA. | | |
| **Element B: Health Risk Assessment Tool (HRAT)**<br>**Factor 2. Use of HRAT Information to develop the ICP** | | |
| Use SDOH assessment for all members to advance person-centered care. | | |
| Identify non-waiver members with strong predictors of needing LTSS (admit to SNF, diagnosis of dementia, and needing help in ADLs) and offer referral to AAA. | | |
| **Element C: Face-to-Face Encounter** | | |
| | | |

**Indiana FSSA D-SNP Model of Care (MOC) Requirements**
**2026 SMAC MOC Checklist (**Red Font, new from 2025)

| Indiana FSSA Requirement | Page | Notes |
|---|---|---|
| **MOC 2: Care Coordination (continued)** | | |
| **Element D: Individualized Care Plan (ICP)**<br>**Factor 1. Describe Essential Components of the ICP** | | |
| Coordination of D-SNP benefits with Medicaid covered services. | | |
| Coordinating, facilitating access, and arranging for needed Medicaid services. | | |
| Care coordination for all Medicare and Medicaid services. | | |
| Collaborate with the State to increase integration and alignment of Medicare and Medicaid services to include functional and social supports provided through the PathWays Waiver and H&W Waiver. | | |
| Incorporate waiver service plans into ICP of PathWays Waiver and H&W Waiver members. | | |
| Assess and document “What Matters” most in members with PathWays Waiver, H&W Waiver, or Diagnosis of Dementia, and use to inform ICP. | | |
| Identify, assess, and incorporate existing advance directives (including health care representative) into ICP of members with PathWays Waiver, H&W Waiver, or Diagnosis of Dementia. | | |
| Perform Comprehensive Medication Review annually by a pharmacist working in collaboration with the D-SNP Care Manager/Care Coordinator and prescriber(s) for members having a Diagnosis of Dementia in PathWays Waiver or H&W Waiver. | | |
| Provide dementia education and supports (including offering AAA referral) to all members with Diagnosis of Dementia and their informal caregivers. | | |
| Administer a caregiver support program to primary informal caregivers of non-waiver members with Diagnosis of Dementia using State modified CMS GUIDE requirements for caregiver education and support (GUIDE, Guiding an Improved Dementia Experience). | | |
| Offer referral to AAA non-waiver members with strong predictors of needing LTSS: admit to SNF, diagnosis of dementia, and needing help in ADLs. | | |
| Assess and document informal caregiver supports and implement plan to address in non-waiver members with strong predictors of needing LTSS. | | |
| Identify members receiving behavioral health (BH) services (including MRO and BPHC) and coordinate care with appropriate BH provider (including CMHCs). | | |

| Indiana FSSA Requirement | Page | Notes |
|---|---|---|
| **MOC 2: Care Coordination (continued)** | | |
| **Element D: Individualized Care Plan (ICP)**<br>**Factor 2. Describe the ICP Development Process** | | |
| Assign a designated care manager/care coordinator and offer case management to members the State has identified as vulnerable (PathWays Waiver, H&W Waiver, MFP, Diagnosis of Dementia, and SMI Diagnosis) | | |
| Incorporate waiver service coordinator into ICT when applicable. | | |
| Identify non-waiver members with strong predictors of needing LTSS (admit to SNF, diagnosis of dementia, and needing help in ADLs) and offer referral to AAA. | | |
| Assess and document informal caregiver supports and implement plan to address in non-waiver members with strong predictors of needing LTSS. | | |
| Use SDOH assessment for all members to advance person-centered care. | | |
| Identify members receiving behavioral health (BH) services (including MRO and BPHC) and coordinate care with appropriate BH provider (including CMHCs). | | |
| **Element D: Individualized Care Plan (ICP)**<br>**Factor 3. Detail Personnel Responsible for ICP Development** | | |
| Assign a designated care manager/care coordinator for members the State has identified as vulnerable (PathWays Waiver, H&W Waiver, MFP, Diagnosis of Dementia, and SMI Diagnosis) who provides longitudinal care coordination that includes care coordination with member's waiver service coordinator when applicable. | | |
| **Element E: Interdisciplinary Care Team (ICT)**<br>**Factor 1.Detail ICT Membership** | | |
| Incorporate waiver service coordinator into ICT when applicable. | | |
| **Element E: Interdisciplinary Care Team (ICT)**<br>**Factor 2. Describe ICT Roles and Facilitation of Enrollee Participation** | | |
| Assign a designated care manager/care coordinator for members the State has identified as vulnerable (PathWays Waiver, H&W Waiver, MFP, Diagnosis of Dementia, and SMI Diagnosis) who provides longitudinal care coordination that includes care coordination with member's waiver service coordinator when applicable. | | |
| **Element E: Interdisciplinary Care Team (ICT)**<br>**Factor 4. Describe Communication Plan** | | |
| Incorporate A&D waiver service coordinator into ICT when applicable. | | |

| Indiana FSSA Requirement | Page | Notes |
|---|---|---|
| **MOC 2: Care Coordination (continued)** | | |
| **Element F: Care Transition Protocols**<br>**Factor 1. Facilitate Continuity of Care** | | |
| Notify FSSA within two business days upon learning when High Risk member has ADT event to/from hospital or SNF. | | |
| Notify FSSA within two business days upon learning when High Risk member has observation stay or ED visit. | | |
| Upon receiving notification of ADT to/from hospital or SNF of High Risk member, coordinate care management activities with waiver service coordinator | | |
| Upon receiving notification of ADT to/from observation stay or ED visit of High Risk member, coordinate care management activities with waiver service coordinator. | | |
| **Element F: Care Transition Protocols**<br>**Factor 2. Identify Care Transition Personnel** | | |
| Assign a designated care manager/care coordinator for members the State has identified as vulnerable (PathWays Waiver, H&W Waiver, MFP, Diagnosis of Dementia, and SMI Diagnosis) who provides longitudinal care coordination that includes care coordination with member's waiver service coordinator when applicable. | | |
| **Element F: Care Transition Protocols**<br>**Factor 6. Describe Notification Process for Designated Point of Contact** | | |
| Assign a designated care manager/care coordinator for members the State has identified as vulnerable (PathWays Waiver, H&W Waiver, MFP, Diagnosis of Dementia, and SMI Diagnosis) who provides longitudinal care coordination including serving as member's transitions point of contact. | | |

| **Indiana FSSA Requirement** | **Page** | **Notes** |
|---|---|---|
| **MOC 3: Provider Network** | | |
| | | |
| **MOC 4: MOC Quality Measurement and Performance Improvement** | | |
| **<u>Element A: MOC Quality Performance Improvement Plan</u>**<br>**Element B: Measurable Goals and Health Outcomes for the MOC** | | |
| Incorporate the following NCQA HEDIS Measures in the D-SNP overall quality improvement plan and as specific enrollee health outcome measures used to measure overall SNP enrollee health outcomes.<br>Assess and track NCQA HEDIS Measures broken out from aggregated Star Ratings for Indiana population and subpopulations by PBP: PathWays, Full Duals, and Partial Duals; and those subpopulations the State has identified as vulnerable (PathWays Waiver, H&W Waiver, Diagnosis of Dementia, and SMI Diagnosis):<br>a) Measure C06: Care for Older Adults – Medication Review[4,5]<br>b) Emergency Department Utilization (EDU)<br>c) Acute Hospital Utilization (AHU)<br>d) Measure C15: Plan All-Cause Readmissions (PCR)[4,5]<br>e) Measure C17: Transitions of Care (TRC)[4,5]<br>• Notification of inpatient admission and discharge;<br>• Receipt of discharge information;<br>• Patient engagement after inpatient discharge; and<br>• Medication reconciliation post-discharge.<br>f) Use of High Risk Medications in the Elderly (DAE)[5]<br>g) Follow-Up after Hospitalization for Mental Illness (FUH)[5]<br>[4] Medicare 2025 Star Ratings quality and performance measures<br>[5] SNP specific HEDIS measures | | |

## Program Plans Submitted Annually for State Approval

- Dementia Care Program Plan
- SDOH Interventions Plan (Food/Housing/Transportation)
- Falls Prevention Plan

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NATIONAL ACADEMY OF MEDICINE

# EFFECTIVE CARE FOR HIGH-NEED PATIENTS

## OPPORTUNITIES FOR IMPROVING OUTCOMES, VALUE, AND HEALTH

NAM Special Publication

THE LEARNING HEALTH SYSTEM SERIES

# EFFECTIVE CARE FOR HIGH-NEED PATIENTS

## OPPORTUNITIES FOR IMPROVING OUTCOMES, VALUE, AND HEALTH

Peter Long, Melinda Abrams, Arnold Milstein, Gerald Anderson, Katherine Lewis Apton, Maria Lund Dahlberg, and Danielle Whicher, *Editors*

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*"Knowing is not enough; we must apply.*
*Willing is not enough; we must do."*
—GOETHE

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This special publication has been reviewed in draft form by individuals chosen for their diverse perspectives and technical expertise, in accordance with review procedures established by the NAM. We wish to thank the following individuals for their review of this publication:

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**GAIL WILENSKY,** Project HOPE

Although the reviewers listed above have provided many constructive comments and suggestions, they were not asked to endorse the content of this publication, nor did they see the final draft before it was published. Review of this publication was overseen by **Danielle Whicher,** senior program officer, NAM; **Gwen Hughes,** senior program assistant, NAM; and **Michael McGinnis,** Leonard D. Schaeffer Executive Officer, NAM. Responsibility for the final content of this publication rests entirely with the authors and the NAM.

# PREFACE

The National Academy of Medicine's Leadership Consortium for a Value & Science-Driven Health System provides a trusted venue for national leaders in health and health care to work cooperatively toward effective, innovative care that consistently adds value to patients and society. Consortium members are leaders from stakeholder communities brought together by their common commitment to steward advances in science, value, and culture necessary for a health system that continuously learns and improves in fostering healthier people.

It has been known for some time that a small percentage of patients with complex health and social needs use a disproportionate share of medical care at significant cost to them, the healthcare system, and broader society. There is also substantial evidence that the standard of care provided to these individuals, while costly, often does not meet their expectations. That said, there exists a number of successful programs and models in health systems and communities across the country that are providing excellent care and producing positive results. To date, they have remained positive exceptions to the norm rather than become the standard of care. Beyond the inherent challenges of scaling and spreading promising care models, there is a growing recognition that some federal and state health policies and payment models inhibit rather than facilitate the delivery of more effective and lower cost care and services for high-need patients.

NAM hosted three public workshops exploring high-need patients in more depth to inform future policy and practice. Through our inquiry, we found that bold policy action and care delivery reform is needed to improve care for high-need patients and reduce costs. The high-need patient population is diverse, complex, expensive, and dynamic. Addressing their needs will require the appropriate balance between standardized and customized approaches to care. Segmenting high-need patients into smaller homogeneous subgroups using a "taxonomy" represents one promising tool to inform and target care and should be rapidly tested in real-world settings in conjunction with care models that have been shown to work. It is clear that effective tools, care models, and policies must extend beyond strictly medical approaches to address social and behavioral factors. In order to be actionable, policy solutions must account for existing system constraints and complexities such as the integration of medical and social approaches and the financing of care models.

I want to recognize the Peterson Center on Healthcare, who funded these activities at the National Academy of Medicine (NAM) in order to advance our knowledge and actions around this critical issue. The Center also supported associated research projects at the Harvard T. H. Chan School of Public Health and the Bipartisan Policy Center to provide quantitative and policy analysis used to inform these workshops. Those teams provided invaluable input and shared important perspectives throughout the process, as did Melinda Abrams from The Commonwealth Fund.

Thanks also to the hundreds of individuals who participated in the three public workshops. In particular, I want to recognize the patients and caregivers who shared their personal stories at the beginning of each workshop. Their stories provided a powerful reminder why this effort is so important and focused our attention on improving outcomes from their perspectives.

Thank you to the planning group, who remained committed, curious, and engaged throughout the process. The process produced a publication that is both comprehensive in its scope and focused on practical policy solutions. Beyond planning the three workshops, two subgroups addressed specific issues that were raised as gaps in our knowledge. The taxonomy and policy workgroups greatly enhanced the utility of this publication.

Finally, I would like to acknowledge the leadership demonstrated by the dedicated staff at the NAM (Elizabeth, Katie, Maria, Danielle, Gwen, Emma, Michelle, Marianne, Michael, Daniel Bearss of the National Academies of Science, Engineering, and Medicine Research Center, and Joe Alper) who shepherded this project from its inception through the release of this publication. They organized the three public workshops, supported the working groups, and assisted in the drafting of this publication.

As our nation once again debates health care financing approaches that could fundamentally alter people's access to health insurance coverage and medical care, it is critical to focus attention on those individuals who are the heaviest users of health care and commit to improving their outcomes while reducing spending. There are currently major policy barriers to broad implementation of what we already know does work. Future policies and funding proposals that either ignore what we know works or inhibit us from implementing effective care models will be detrimental to the health of these vulnerable populations. If our goal is to improve the health of our most vulnerable neighbors, we must take effective actions now.

—Peter V. Long, PhD
Chair, Planning Committee

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## APPENDIXES

# BOXES, FIGURES, AND TABLES

*Boxes*

*Figures*

*Tables*

# ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| ACE | Adverse Childhood Experiences |
| ACO | accountable care organization |
| AHRQ | Agency for Healthcare Research and Quality |
| BPC | Bipartisan Policy Center |
| CMMI | Center for Medicare & Medicaid Innovation |
| CMS | Centers for Medicare & Medicaid Services |
| CRG | clinical risk group |
| D-SNP | Dual Eligible Special Needs Plan |
| DME | Durable Medical Equipment |
| EHR | electronic health record |
| EMDR | eye-movement desensitization and reprocessing |
| FPL | federal poverty line |
| FQHC | federally qualified health center |
| HCH | Health Care Home program (Minnesota) |
| HIPAA | Health Insurance Portability and Accountability Act of 1996 |
| HRP | Health Resilience Program |
| HSPH | Harvard T.H. Chan School of Public Health |
| IMPACT | Improving Mood: Promoting Access to Collaborative Treatment |
| IOCP | Intensive Outpatient Care Program |
| LTC | Long-Term Care |
| LTSS | long-term services and supports |

| | |
|---|---|
| MEPS | Medical Expenditure Panel Survey |
| MIND at Home | Maximizing Independence at Home |
| NAM | National Academy of Medicine |
| OECD | Organisation for Economic Co-operation and Development |
| PAC | Post-Acute Care |
| PACE | Program of All-Inclusive Care for the Elderly |
| PBGH | Pacific Business Group on Health |
| PMPM | per-member per-month |
| PRAPARE | Protocol for Responding to and Assessing Patients' Assets, Risks, and Experiences |
| PRISM | Predictive Risk Intelligence System |
| PTSD | Post-Traumatic Stress Disorder |
| SNP | Special Needs Plan |

# SUMMARY

Today, 1 percent of patients account for more than 20 percent of health care expenditures, and 5 percent account for nearly half of the nation's spending on health care (Figure S-1) (Mitchell, 2016). Improving care management for this population while balancing quality and associated costs is at the forefront of national health care goals, and reaching this particular goal will require active involvement of a broad range of stakeholders at multiple levels. To advance insights and perspectives on how to better manage the care of this population and to stimulate actions on opportunities for improving outcomes and reducing the costs of health care, the National Academy of Medicine (NAM), through its Leadership Consortium for a Value & Science-Driven Health System (the Leadership Consortium), in partnership with the Harvard T.H. Chan School of Public Health (HSPH), the Bipartisan Policy Center (BPC), The Commonwealth Fund, and the Peterson Center on Healthcare—which funded this initiative—has undertaken a collaborative assessment on strategies for better serving high-need patients.

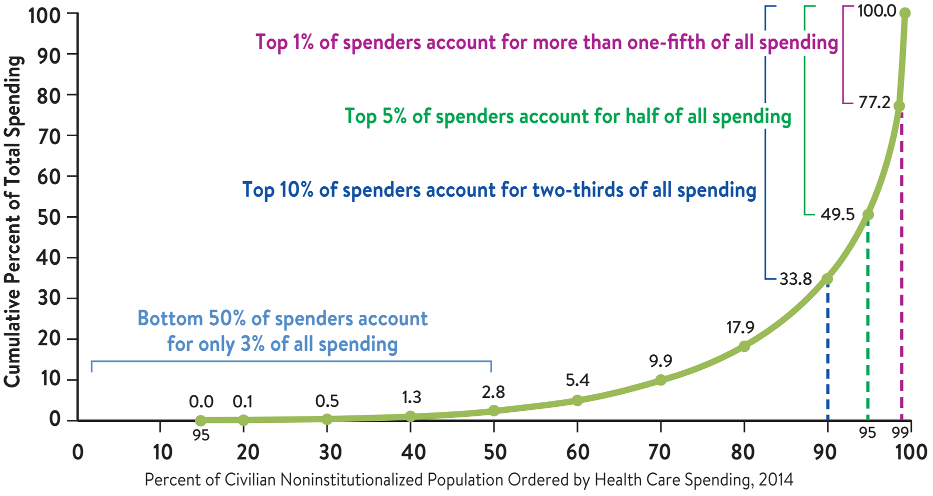


**FIGURE S-1** | Distribution of personal health care spending in the US civilian noninstitutionalized population, 2014.

SOURCE: Dzau et al., 2017.

The NAM was tasked with bringing together experts and stakeholders over the course of three workshops held between July 2015 and October 2016 to consider and reflect upon the key issues for improving care for high-need patients and summarizing the presentations, discussions, and literature for publication. This publication reports and reflects on the following issues: (1) key characteristics of high-need patients; (2) the use of a patient categorization scheme—or a taxonomy—as a tool to inform and target care; (3) promising care models and attributes to better serve this patient population, as well as insights on "matching" these models to specific patient groups; and (4) areas of opportunity for policy-level action to support the spread and scale of evidence-based programs. The publication concludes by exploring common themes and opportunities for action in the field.

## KEY CHARACTERISTICS OF HIGH-NEED PATIENTS

To date, little has been written about the characteristics of high-need individuals using empirical data, and, as a result, there is not yet a consistent definition of need. Since understanding the characteristics of high-need patients is the first step in determining how to improve care, chapter 2 explores candidate criteria used to identify high-need patients along with key demographic and experiential characteristics.

While the high-need patient population is diverse, a synthesis of analyses reported in the literature identified three criteria that could form a basis for defining and identifying this population: total accrued health care costs, intensity of care utilized for a given period of time, and functional limitations. Functional limitations include limitations in activities of daily living such as dressing, bathing or showering, ambulating, self-feeding, grooming, and toileting, or limitations in instrumental activities of daily living that support an independent lifestyle such as housework, shopping, managing money, taking medications, using a telephone, or being able to use transportation (Hayes et al., 2016b). In terms of demographics, recent literature demonstrates that high-need individuals are disproportionately older, female, white, and less educated (Cohen et al., 2014; Hayes et al., 2016b; Joynt et al., 2017). They are also more likely to be publicly insured, have fair to poor self-reported health (Hayes et al., 2016c), and be susceptible to lack of coordination within the health care system (Sarnak and Ryan, 2016). Their needs extend beyond care for their physical ailments to social and behavioral services, which are often of central importance to their overall well-being. As a result, addressing clinical needs alone will not improve outcomes or reduce costs for this population. Rather, it will also be necessary to address an individual's functional, social, and behavioral needs, largely through the provision of social and community services that today are not typically the province of health care delivery systems (Blumenthal et al., 2016).

## THE PATIENT TAXONOMY AND IMPLICATIONS FOR CARE DELIVERY

Understanding how to effectively care for high-need patients requires knowing which factors drive health care need. Because this patient population is heterogeneous, those factors will differ for different segments of the population. Therefore, a taxonomy that segments individuals in a health system's population based on the care they need as well as how often they might need it can help determine how to serve that population more effectively. Drawing on recent taxonomies developed by two organizations, the Harvard T.H. Chan School of Public Health and The Commonwealth Fund, as well as the workshop series, the assessment of an expert taxonomy working group, and the published literature, chapter 3 provides guidance on the adoption and application of key elements of a patient taxonomy in practice.

Both the taxonomy developed by the Harvard T.H. Chan School of Public Health and the one developed by The Commonwealth Fund segment high-need individuals based on medical characteristics because this is a feasible starting point for most health care systems. Recognizing that a taxonomy focused on medical characteristics may neglect other factors that are key drivers of need, the taxonomy working group built on these efforts to offer a conceptual starter taxonomy that incorporates functional, social, and behavioral factors into a medically oriented taxonomy, not as independent segments but as factors that influence the care model or care team composition most likely to benefit particular patient segments (Figures S-2 and Table S-1). This starter taxonomy can provide guidance for health system leaders and payers on how to embed social risk factors, behavioral health factors, and functional limitations in a taxonomy for high-need patients. Patients would first be assigned to a clinical segment, with follow-on assessment of behavioral health issues and social services needs to determine the specific type of services that are required. Key behavioral health factors most likely to affect care delivery decisions include substance abuse, serious mental illness, cognitive decline, and chronic toxic stress and key social risk factors include low socioeconomic status, social isolation, community deprivation, and house insecurity.

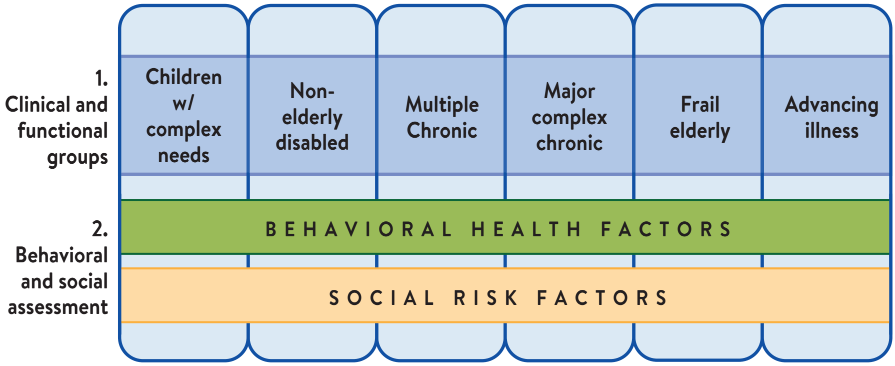


**FIGURE S–2** | A conceptual model of a starter taxonomy for high-need patients.

NOTE: For this taxonomy, functional impairments are intrinsically tied to the clinical segments.

SOURCE: Adapted from Abrams presentation, October 21, 2016.

**TABLE S-1** | Clinical Group Features

| CLINICAL GROUP | FEATURES |
|---|---|
| Children with complex needs | Have sustained severe impairment in at least four categories together with enteral/parenteral feeding or sustained severe impairment in at least two categories and requiring ventilation or continuous positive airway pressure[A] |
| Non-elderly disabled | Under 65 years and with end-stage renal disease or disability based on receiving Supplemental Security Income |
| Multiple chronic | Only one complex condition and/or between one and five noncomplex conditions[B,C] |
| Major complex chronic | Two or more complex conditions or at least six noncomplex conditions[B,C] |
| Frail elderly | Over 65 years and with two or more frailty indicators[D] |
| Advancing illness | Other terminal illness, or end of life |

a Categories for children with complex needs are: learning and mental functions, communication, motor skills, self-care, hearing, vision

b Complex conditions, as defined in (Joynt et al., 2017), are listed in Table 2–1.

c Noncomplex conditions, as defined in (Joynt et al., 2017), are listed in Table 2–1.

d Frailty indicators, as defined in (Joynt et al., 2017), are gait abnormality, malnutrition, failure to thrive, cachexia, debility, difficulty walking, history of fall, muscle wasting, muscle weakness, decubitus ulcer, senility, or durable medical equipment use.

While this starter taxonomy is useful, additional work is needed to develop an ideal taxonomy that presents holistic guidance on how care and finite resources should be targeted and delivered to improve the health of high-need individuals, and ideally reduce the cost of care. One challenge to achieving this is that most health information technology systems do not support integrated and streamlined data collection of patient's physical and behavioral conditions, their care utilization, and their social challenges. Additionally, multiple payers and varied benefits packages pose administrative and operational hurdles for the implementation of a taxonomy.

## CARE MODELS THAT DELIVER

The purpose of taxonomies is to align high-need patients with the care models that target their specific needs. For taxonomies to be actionable, successful care models for different segments of high-need patients must exist. Chapter 4 draws on the workshop series and a review of evidence syntheses and other literature to produce a list of attributes of successful care models and to map successful models to different high-need patient segments.

While the success of even the best care model will depend on the particular needs and goals of the patient group a model intends to serve, which varies for different segments of high-need patients, all successful care models should foster effectiveness across three domains: health and well-being, care utilization, and costs. Care models that have been shown to be successful share a number of common attributes, which can be organized in an analytic framework with the following four dimensions: focus on service setting, care attributes, delivery features, and organizational culture. With respect to service setting, generally, the most successful programs for managing high-need individuals focus on either a targeted age group with broad combinations of diagnoses or individuals classified as high-utilizers. Models tend to fall into several broad, nonmutually exclusive categories related to service settings: enhanced primary care, transitional care, and integrated care (Bleich et al., 2015; Boult et al., 2009). Care and condition attributes and delivery features that are common across many successful care models are described in Boxes S-1 and S-2, respectively. Finally, features of organizational culture identified by various authorities that can contribute to the success of care models include the engagement of leadership across levels, customization of the model to the local context, strong team relationships, including patients and care partners, the implementation of appropriate training, continuous assessment with effective metrics, and the use of multiple sources of data (Hong et al., 2014b).

## BOX S-1

### *Care and Condition Attributes of Successful Care Models*

- **Assessment**. Multidimensional (medical, functional, and social) patient assessment
- **Targeting**. Targeting those most likely to benefit
- **Planning**. Evidence-based care planning
- **Alignment**. Care match with patient goals and functional needs
- **Training**. Patient and care partner engagement, education, and coaching
- **Communication**. Coordination and communication among and between patient and care team
- **Monitoring**. Proactive tracking of the health status and adherence to care plans
- **Continuity**. Seamless transitions across time and settings

SOURCES: (Anderson et al., 2015; Bodenheimer and Berry-Millett, 2009; Boult and Wieland, 2010; Brown et al., 2012; McCarthy et al., 2015; Nelson, 2012)

## BOX S-2

### *Delivery Features of Successful Care Models*

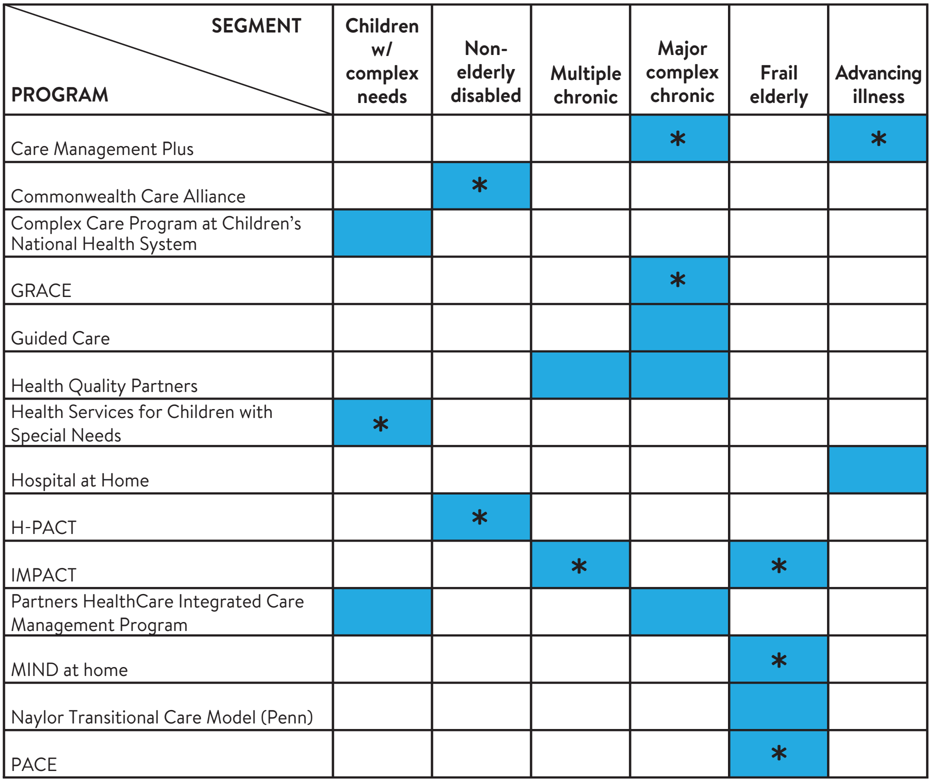
- **Teamwork**. Multidisciplinary care teams with a single, trained care coordinator as the communication hub and leader
- **Coordination**. Extensive outreach and interaction among patient, care coordinator, and care team, with an emphasis on face-to-face encounters among all parties and collocation of teams
- **Responsiveness**. Speedy provider responsiveness to patients and 24/7 availability
- **Feedback**. Timely clinician feedback and data for remote patient monitoring
- **Medication management**. Careful medication management and reconciliation, particularly in the home setting
- **Outreach**. The extension of care to the community and home
- **Integration**. Linkage to social services
- **Follow-up**. Prompt outpatient follow-up after hospital stays and the implementation of standard discharge protocols

SOURCES: (Anderson et al., 2015; Bodenheimer and Berry-Millett, 2009; Brown et al., 2012; Hasselman, 2013; McCarthy et al., 2015; Nelson, 2012; Rodriguez et al., 2014)

Using this analytic framework, the planning committee identified 14 successful care models for high-need patients and cross-referenced those to the segment(s) of the proposed taxonomy that could be served if health systems leaders match the needs of their patients to appropriate models within this "menu" of evidence-based approaches (Figure S-3).

## POLICY TO SUPPORT THE SPREAD AND SCALE OF CARE MODELS

A number of barriers currently prevent the spread or sustainability of successful care models including the misalignment between financial incentives and the services that are necessary to care for high-need patients, health system fragmentation, workforce training issues, and disparate data systems that cannot easily share data. Chapter 5 explores areas in which policy initiatives could accelerate the spread and scale of care models for high-need patients—particularly the programmatic integration of social supports and medical care—through expanding and realigning payment policies, improving the organization of care, developing a workforce to deliver comprehensive health care, and improving the data infrastructure.



| SEGMENT / PROGRAM | Children w/ complex needs | Non-elderly disabled | Multiple chronic | Major complex chronic | Frail elderly | Advancing illness |
|---|---|---|---|---|---|---|
| Care Management Plus | | | | ■ * | | ■ * |
| Commonwealth Care Alliance | | ■ * | | | | |
| Complex Care Program at Children's National Health System | ■ | | | | | |
| GRACE | | | | ■ * | | |
| Guided Care | | | | ■ | | |
| Health Quality Partners | | | ■ | ■ | | |
| Health Services for Children with Special Needs | ■ * | | | | | |
| Hospital at Home | | | | | | ■ |
| H-PACT | | ■ * | | | | |
| IMPACT | | | ■ * | | ■ * | |
| Partners HealthCare Integrated Care Management Program | ■ | | | ■ | | |
| MIND at home | | | | | ■ * | |
| Naylor Transitional Care Model (Penn) | | | | | ■ | |
| PACE | | | | | ■ * | |

FIGURE S-3 | A sample of 14 care models which have evidence of success, matched to the six population segments identified in the taxonomy showing that each segment has been matched to at least one program. A subset of these care models also targets social and/or behavioral risk factors faced by high-need patients and is marked with an (*).

NOTE: Many of these programs could be matched and/or adapted to other patient segments.

SOURCE: Models of Care for High-Need Patients Planning Committee, National Academy of Medicine

Perhaps the most prominent barrier to the adoption of successful care models is payment policies that misalign financial incentives—particularly those that reimburse providers on a fee-for-service basis for discrete medical interventions at the expense of a broader assessment and engagement of medical and social needs. While many insurers, including states and the federal government, are starting to embrace value-based purchasing that includes paying for care delivered outside of the traditional medical silo (Bachrach et al., 2014), further progress could be made by combining Medicare and Medicaid funding streams for dual-eligible patients[1] into an integrated benefit and care delivery structure that allows flexibility in benefit design to address the full range of patient needs (Hayes et al., 2016a). Virtually all high-need patients have challenging social support needs that determine the success of their care management. To be effective, value-based payment models for high-need patients require supporting and rewarding the seamless integration of medical, behavioral, and social services including, where appropriate, support for the delivery of these services in home and community settings (Barnett et al., 2015). This is the aim of shared savings approaches structured to ensure that any savings from the implementation of successful care models accrue to both payers and providers (Hong et al., 2014a).

To improve the organization of care, federal and state governments, working with their local partners, will need to engage in a strategy coordinated to incentivize the provision of evidence-based social support services in conjunction with the delivery of medical services. State efforts may be informed by a policy framework developed by McGinnis and colleagues at The Commonwealth Fund to help states establish the infrastructure necessary to support ongoing integration of health and social services, particularly for Medicaid beneficiaries (McGinnis et al., 2014). It is also necessary to prepare the workforce to deliver team-based, comprehensive health care. To accomplish this, academic health centers and professional societies should collaborate on developing new training and certification opportunities that focus on the treatment and social support needs of high-need patients, including training on team-based care and care coordination across health and social sectors (Thomas-Henkel et al., 2015). In addition, credentialing programs, particularly for nontraditional health workers such as community health workers and peer support providers, could be developed.

Finally, reliable monitoring and continuous improvement of effective models of care for high-need patients depend on high-quality data and analytics that

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[1] Dual eligible patients are low-income Medicare beneficiaries who are eligible for Medicare and Medicaid.

can be used to match high-need individuals with specific interventions (Bates et al., 2014; Bradley et al., 2016; Dale et al., 2016; Rajkumar et al., 2015). High-quality data are also required for quality measurement to determine the impact that care models are having on care coordination, utilization, and cost. Currently, there are many disparate systems that cannot easily share information, making it difficult to assess the requirements of high-need individuals and whether they are getting appropriate care. Coordinated federal, state, and local government initiatives must identify barriers that currently inhibit data flow among the clinicians and organizations treating high-need populations and work to minimize those barriers while respecting patient privacy and data security.

## COMMON THEMES AND OPPORTUNITIES FOR ACTION

Common to the presentations and discussions among workshop participants was the notion that improving the care management of high-need patients will require bold policy action and system and payment reform efforts by a broad range of stakeholders at multiple levels. Chapter 6 describes important lessons from this initiative and opportunities for action for each relevant stakeholder group: health systems, payers, providers, patients and family or unpaid caregivers, and the research community.

Three key care requirements stem from the fact that the population of high-need patients is diverse: segmenting patients based on factors that drive health care need is essential for targeting care; effective care models must address the social and behavioral factors in play for a given patient; and finally, policy action should focus on addressing the existing constraints and complexities preventing the integration of medical, behavioral, and social services and with the way the United States finances care models.

Based on these lessons, overarching opportunities for action include:

- Refining the starter taxonomy based on real-world use and experience to facilitate the matching of individual need and functional capacity to specific care programs;
- Integrating and coordinating the delivery of medical, social, and behavioral services in a way that reduces the burdens on patients and caregivers;
- Developing approaches for spreading and scaling successful programs and for training the workforce capable of making these models successful;
- Promoting payment reform efforts that further incentivize the adoption of successful care models and the integration of medical and social services;

- Establishing a small set of proven quality measures appropriate for assessing outcomes, including return on investment, and continuously improving programs for high-need individuals; and
- Creating road maps and tools to help organizations adopt models of care suitable for their particular patient populations.

While each stakeholder sector individually may impact a patient's life, a community, or even a regional health delivery system, one of the most expensive and challenging populations for the current health care system will remain underserved until there is a unified effort—rather than small, incremental steps—to improve care for the nation's high-need patients and to reduce the cost of delivering that care.

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# 1

# INTRODUCTION AND OVERVIEW

The exceptionally high expenditures associated with providing care for a relatively small but growing number of individuals with significant medical needs disproportionately drive the escalating cost of medical care in the United States. This population of high-need individuals includes an increasingly heterogeneous group of people with multiple chronic diseases, members of an aging population, and patients with varying levels of medical, functional, social, and behavioral complexity. Today, 1 percent of patients account for more than 20 percent of health care expenditures, and 5 percent account for nearly half of the nation's spending on health care (Mitchell, 2016). Improving care management for this population while balancing quality and associated costs is at the forefront of national health care goals, and reaching this particular goal will require the active involvement of a broad range of stakeholders at multiple levels. Health care systems have implemented several successful strategies with the hope of improving health outcomes, improving the patient experience, and lowering costs, but a "best practice" for high-need patient management has proven elusive; the majority of care remains fragmented, uncoordinated, reactive, and often poorly matched to individuals' circumstances. The nation needs a better understanding of how to best utilize its resources to care for this growing population.

To advance insights and perspectives on how to better manage the care of high-need patients and to stimulate actions on opportunities for improving outcomes and reducing the costs of health care for these vulnerable populations, the National Academy of Medicine (NAM), through its Leadership Consortium for a Value & Science-Driven Health System (the Leadership Consortium), in partnership with the Harvard T.H. Chan School of Public Health (HSPH), the Bipartisan Policy Center (BPC), The Commonwealth Fund, and the Peterson Center on Healthcare—which funded this initiative—has undertaken a collaborative assessment on strategies for better serving high-need patients. The project activities were overseen by an independent planning committee and included (1) planning three workshops to explore the state of knowledge and action;

(2) conducting a literature review of the key studies on the care of high-need patients; and (3) synthesizing the work and proceedings that reflected critical needs and common themes on effective approaches, care models, and possible policy actions to address those needs. This publication synthesizes information and insights gleaned from the workshop presentations and discussions, as well as concurrent and supplemental work led by the partnering organizations, the workshop planning committee, and other external experts and stakeholders, to move the field forward.

## PARTNER ORGANIZATIONS

The five-way partnership involving the Leadership Consortium, the HSPH, the BPC, the Peterson Center on Healthcare, and The Commonwealth Fund has driven this project, with each partner taking on a specific role. The Peterson Center on Healthcare is dedicated to identifying proven solutions that improve care quality, lower costs, and accelerate the adoption of these solutions on a national level. With the aim of identifying programs that successfully serve the growing number of high-need individuals and potential policy solutions to bring these models to scale, the Peterson Center initiated and provided support for the contributions of the NAM, the BPC, and the HSPH.

The BPC examined different policy approaches that might address barriers and accelerate the adoption of proven models for improving care and reducing costs for high-need patients. Its work culminated in a report that was presented at the final workshop and contained draft policy recommendations and areas of opportunity to improve care and outcomes for high-need patients (Hayes et al., 2016a). These recommendations aimed to better align financial incentives, specifically those targeting care for dual-eligible[2] high-need patients.

HSPH's role in this project has been to provide an analysis of data to define both clinically and socially meaningful segments of this heterogeneous group of people as a means of identifying subgroups that might benefit from specific types of programs (Joynt et al., 2017). This analysis addressed three key questions relevant to controllable costs:

- What are the specific characteristics associated with high-need, high-cost patients within these segments?

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[2] Dual-eligible patients are low-income Medicare beneficiaries who are eligible for Medicare and Medicaid.

- How do utilization patterns differ between these segments and within the segments?
- What proportion of the spending and utilization might be reduced for each segment?

HSPH's project team has attempted to identify characteristics of providers and health systems that are more effective at caring for high-need, high-cost patients and reducing the costs associated with preventable health care issues. The project team, with the help of The Commonwealth Fund, examined data from the Medicare population and a set of commercial patients. The team has also worked with colleagues at the Peterson Center on Healthcare to examine data on the dual-eligible population.

The Commonwealth Fund has placed a primary emphasis on these issues and has served as a strategic adviser and contributor throughout the initiative, leveraging its extensive portfolio of work focused on improving care for high-need, high-cost patients. A research and funding institution that aims to promote a high-performing health care system, particularly for the most vulnerable, The Commonwealth Fund is also part of a consortium of five national foundations along with the John A. Hartford Foundation, the Robert Wood Johnson Foundation, the Peterson Center on Healthcare, and The SCAN Foundation—all focused on furthering efforts to improve care for high-need patients. The collaboration works to develop resources to understand the diverse high-need population, to identify evidence-based programs that offer high-quality integrated care at a lower cost, and to accelerate the adoption of these programs nationally.[3]

## THE NATIONAL ACADEMY OF MEDICINE

As the convening body for this initiative, the National Academy of Medicine—through its Leadership Consortium for a Value & Science-Driven Health System—brought together experts and stakeholders to reflect upon the key issues for improving care for high-need patients, synthesize the information and insights gathered, and summarize the presentations, discussions, and literature for publication.

Broadly, the Leadership Consortium convenes national experts and executive-level leaders from key stakeholder sectors for collaborative activities to

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[3] For more information on this consortium, see www.commonwealthfund.org/publications/newsletters/the-commonwealth-fund-connection/2016/aug/aug-2-2016/whats-new/five-health-care-foundations (accessed December 21, 2016). For an example of resources pulled together, see "the Playbook," at http://www.bettercareplaybook.org (accessed December 21, 2016).

foster progress toward a continuously learning health system in which science, informatics, incentives, and culture are aligned for enduring improvement and innovation; best practices are seamlessly embedded in the care process; patients and families are active participants in all elements; and new knowledge is captured as an integral by-product of the care experience. Priorities in this respect include advancing the development of a fully interoperable digital infrastructure, the application of new clinical research approaches, and a culture of transparency on outcomes and cost.

Participants in the Leadership Consortium have set a goal that, by 2020, 90 percent of clinical decisions will be supported by accurate, timely, and up-to-date clinical information and reflect the best available evidence. The Leadership Consortium's approach to meeting this goal is to serve as a forum to facilitate the collaborative assessment and action around issues central to achieving its vision and goal. To address the challenges of improving both evidence development and evidence application, as well as improving the capacity to advance progress on each of those dimensions, Leadership Consortium members (all leaders in their fields) work with their colleagues to identify the issues not being adequately addressed, the nature of the barriers and possible solutions, and the priorities for action. They then work to marshal the resources of the sectors represented on the Leadership Consortium to work for sustained public-private cooperation for change.

A common commitment to certain principles and priorities guides the activities of the Leadership Consortium and its members. These include the commitment to the right health care for each person; putting the best evidence into practice; establishing the effectiveness, efficiency, and safety of medical care delivered; building assessment and accountability into care; advancing clinical data as a public resource for health improvement; shared responsibility distributed equitably across stakeholders, both public and private; collaborative stakeholder involvement in priority setting; transparency in executing activities and reporting results; and individual stakeholder perspectives subjugated to the common good.

## SCOPE AND ACTIVITIES

The independent planning committee organized the three workshops (see Appendix B for the agendas) in accordance with the procedures of the National Academies of Sciences, Engineering, and Medicine. The planning committee's members were Peter V. Long, Chair (Blue Shield of California Foundation), Melinda K. Abrams (The Commonwealth Fund), Gerard F. Anderson (Johns

Hopkins Bloomberg School of Public Health), Tim Engelhardt (Centers for Medicare & Medicaid Services), Jose Figueroa (Harvard Medical School), Katherine Hayes (Bipartisan Policy Center), Frederick Isasi (National Governors Association), Ashish K. Jha (Harvard T.H. Chan School of Public Health), David Meyers (Agency for Healthcare Research and Quality), Arnold S. Milstein (Stanford University), Diane Stewart (Pacific Business Group on Health), and Sandra Wilkniss (National Governors Association).

The workshops brought together national experts and stakeholders to explore commonalities and differences among the subpopulations of high-need patients, to consider the lessons learned from targeted intervention activities, to discuss and inform the approach of the ongoing study by the HSPH on the high-cost Medicare population, and to review policy issues and options, including those suggested by the BPC.

The first workshop, held in July 2015, laid the groundwork for this project and the subsequent workshops. The presentations and discussions identified the key characteristics of high-need patient populations and subgroups of these heterogeneous populations that offer the greatest opportunity for impact. This workshop also examined the factors that are most important in determining which care models are most effective for particular subgroups of high-need patients; the types of active care coordination and providers of social and behavioral health services and supports in different circumstances; and the lessons from past experiences with high-need patients that can inform efforts to spread and scale successful care models.

The second workshop, convened in January 2016, built on the insights from the first workshop and further explored specific issues. The presentations and discussions in the second workshop focused on the use of a patient segmentation strategy to inform which care models are most appropriate for specific subpopulation of high-need patients. They also reviewed sources of data to drive segmentation strategies, efforts to build a taxonomy of high-need patients, and specific design elements of a successful care model. Sessions at this workshop also discussed specific replication strategies to spread and scale those models, the barriers to scaling new delivery models, and essential elements for a policy framework that could mitigate those barriers.

The third workshop, held in October 2016, discussed the implications of the findings of HSPH's study and the policy strategies identified by the BPC. The presentations and discussions at the third workshop examined tools to improve care delivery for high-need patients, including a taxonomy that matches patient needs to care models with the most potential to improve outcomes and lower costs of caring for high-need patients. This workshop also discussed policy-level approaches to support and accelerate the spread and scale of effective care models. An independent rapporteur prepared factual summaries of what occurred at the workshops. Statements, recommendations, and opinions expressed at the workshops were those of individual presenters and participants and have not been endorsed or validated by the NAM.

In addition to the three workshops, the planning committee initiated several important supplementary activities. A taxonomy workgroup reviewed existing approaches and developed guidance on adaptation and application of a taxonomy in practice. Chapter 3 includes the findings from the workgroup's efforts and supporting research. A review of care models examined in the literature identified promising types of care models and key attributes for success. This review informs a four-part framework described in Chapter 4, as well as how successful care models might map to different high-need patient segments. A subgroup of the planning committee also examined policy options most likely to reduce the barriers to the spread and scale of successful models. Those deliberations, together with the work of the BPC and others, provided much of the content for Chapter 5.

## RECURRING THEMES

Informed by discussions, presentations, and concurrent work throughout the course of the project period, this publication reports and reflects on the following issues: (1) key characteristics of high-need patients; (2) the use of a patient categorization scheme—or a taxonomy—as a tool to inform and target care; (3) promising care models and attributes to better serve this patient population, as well as insights on "matching" these models to specific patient groups; and (4) areas of opportunity for policy-level action to support the spread and scale of evidence-based programs. Each of the main chapters begins with a fictional patient vignette highlighting a main point discussed in the chapter. The publication concludes by exploring common themes and opportunities for action in the field.

Recurring themes throughout the initiative include those related to:

- **Functional status.** Functional status is a central determinant of the nature and level of health care needs.
- **Cost.** Patients with complex needs are often high-cost patients, but some high-cost patients do not necessarily have complex needs—for example, those with conditions effectively treated by high-cost interventions.
- **Social circumstances.** Accommodation of social circumstances is key to addressing individuals with high needs.

- **Social services.** Improving care for high-need patients usually requires engaging services outside of the care system and creating patient- and care-partner-specific care plans.
- **Service linkages.** Coordination of care is critical for high-need patients, and success depends on alignment and cooperation between the health care system and services delivered through social, economic, and behavioral programs.
- **Targeting specificity and timeliness.** Health care systems with effective and efficient approaches to sustaining and improving levels of function of high-need patients are those most deliberate and active in identifying and targeting needs early on.
- **Payment alignment.** Payment models segmented according to individual services offer incentives counter to successful models of care for high-need patients, including those of certain Medicare and Medicaid payment policies.
- **Duration.** The nature and level of needs can change over time. A significant number of high-need patients are only transiently high-need.
- **Variability.** High-need patients are heterogeneous and no single care model can provide all the services required by high-need patients; relevant approaches must therefore be guided by a taxonomy that matches intervention options with the specific needs of different categories of high-need patients.

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# 2

# KEY CHARACTERISTICS OF HIGH-NEED PATIENTS

*Fictional Patient vignette: Mark is a 54-year-old man with rheumatoid arthritis and chronic heart disease. Many days he was reliant on a wheelchair to get around because of chronic pain. His job didn't allow him to telework, yet it was difficult to get to the handicap entrance in the back of the building and his schedule was firmly fixed at 9 to 5. As a result, Mark spent more than an hour a day commuting in his car (public transportation wasn't readily available). Everyday tasks like running errands and getting groceries were difficult. Between his pain and his heavy work schedule, he was left with little time to visit with other people, both friends and family, and it had left him feeling incredibly isolated and alone. He really missed having a pet, but he'd had to give his cat, Felix, away because Mark could no longer take care of him properly. Mark felt he wouldn't mind his disease so much if it didn't impact his life and relationships so heavily.*

Who are high-need patients? A simple definition describes them as individuals with complex conditions and circumstances requiring multiple services that, for the most part, are not currently delivered easily or effectively by the health care system. This definition is impractical, however, for the task of identifying a population. In general, high-need individuals are the most costly patients, but not all high-cost individuals are also of high-need (Zodet, 2016). Many high-need patients are seniors, but younger adults with disabilities, chronic mental illness, and/or substance abuse disorders also require extensive care (Blumenthal et al., 2016b). Some individuals are of high-need for an extended time because they have multiple chronic conditions that may be stable with treatment but persist for years while other individuals, such as those treated for certain cancers or complex orthopedic surgeries, may be high-need only temporarily

(Johnson et al., 2015b). In addition to their formal diagnoses, many high-need patients have functional limitations that affect their ability to get care or engage in activities of daily living. Others may have severe, persistent behavioral health issues, or their conditions may be exacerbated by such nonmedical factors as a lack of housing, food, and supportive personal relationships (Johnson et al., 2015a; Kansagara et al., 2011).

This chapter explores candidate criteria used to identify high-need patients along with key demographic and experiential characteristics. The next chapter will consider taxonomic approaches to categorizing this heterogeneous population into subgroups with shared management characteristics as a means of developing strategies to inform planning and delivery of targeted and more effective care for specific subgroups.

## IDENTIFYING HIGH-NEED PATIENT POPULATIONS

In her presentation at the first workshop, Melinda Abrams from The Commonwealth Fund noted that, to date, little has been written about the characteristics of high-need individuals using empirical data, and, as a result, there is not yet a consistent definition of need. Most studies have examined people who have a specific disease, have multiple chronic conditions, frequently use emergency department services, annually have high individual health care costs, have a disability, or have a mental illness. At some point, noted Abrams, the field will need to settle on a definition.

Health care systems and researchers have used several approaches to identifying high-need populations. One common and direct approach—which focuses on those patients who accrue the largest annual expenditures on health care—is based on the well-established observation that a small percentage of patients account for a large percentage of the nation's health care expenditures (Cohen, 2015; Cohen and Uberoi, 2013; Stanton and Rutherford, 2006; Zodet, 2016). In 2014, for example, the top 1 percent of spenders accounted for more than 20 percent of total health care expenditures, and the top 5 percent accounted for about 50 percent of the nation's health care costs (Mitchell, 2016) (see Figure 2–1).

On the other hand, focusing exclusively on cost provides an incomplete picture of high-need patients. A substantial percent of high-cost individuals incurs those costs for only a limited time (Cohen and Yu, 2012). Medical Expenditure Panel Survey (MEPS) data show, for example, that only 42 percent of individuals who accounted for the top 10 percent of medical expenditures had persistently high spending over a 2-year period. Approximately 30 percent had some reduction in spending in the second year, while 28 percent had episodic high spending, with lower spending in the second year.

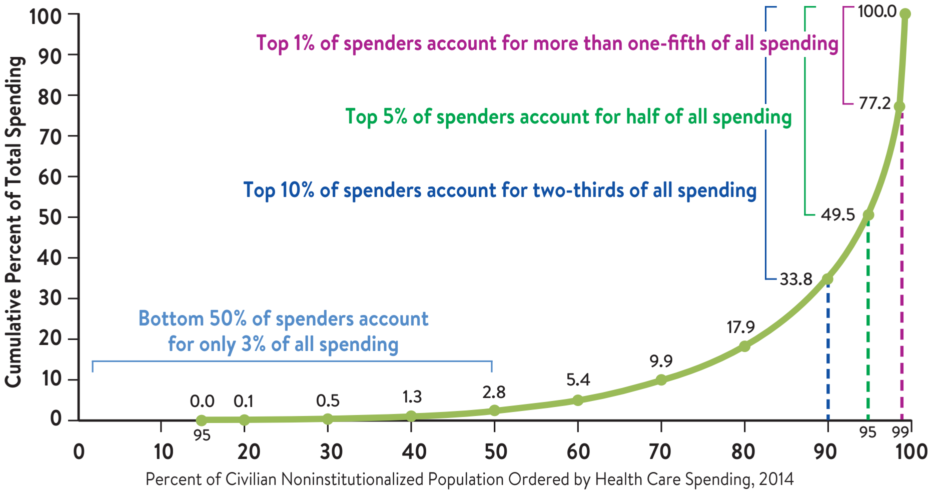

**FIGURE 2–1** | Distribution of personal health care spending in the US civilian noninstitutionalized population, 2014.

SOURCE: Dzau et al., 2017.

Profiling chronic or complex conditions, including behavioral health issues, offers another approach that, on the surface, seems sensible. Ashish Jha from the Harvard T.H. Chan School of Public Health and Jose Figueroa from Harvard Medical School and Brigham and Women's Hospital, together with colleagues, conducted an analysis of Medicare data to segment the high-cost patient population into clinically meaningful subgroups (Joynt et al., 2017).[4] As part of this analysis, they developed a list of complex and noncomplex chronic conditions that could be used to help determine level of patient need (see Table 2–1) from key chronic disease groups included by the Centers for Medicare & Medicaid Services in its measure for unplanned admission for patients with multiple chronic diseases (RTI International, 2015). The nine complex chronic diseases in Table 2–1 were differentiated by Jha, Figueroa, and colleagues because they account for the majority of spending and morbidity.

In fact, an analysis of MEPS data conducted by The Commonwealth Fund (Hayes et al., 2016c) identified approximately 79 million people age 18 or older

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[4] More details about the segmentation work are discussed in Chapter 3.

(i.e., 30 percent of the population) with three or more chronic conditions,[5] indicating—as was mentioned in the article—that simply counting conditions is an oversimplified approach, and additional factors must be taken into account.

**TABLE 2–1** | Complex and Noncomplex Chronic Conditions

| COMPLEX CHRONIC CONDITIONS | NONCOMPLEX CHRONIC CONDITIONS |
|---|---|
| Acute myocardial infarction | Amputation status |
| Ischemic heart disease | Arthritis and other inflammatory tissue disease |
| Chronic kidney disease | Artificial openings |
| Congestive heart failure | Benign prostatic hyperplasia |
| Dementia | Cancer |
| Diabetes | Cystic fibrosis |
| Chronic lung disease | Endocrine and metabolic disorders |
| Psychiatric disease | Eye disease |
| Specified heart arrhythmias | Hematological disease |
| Stroke | Hyperlipidemia |
|  | Hypertension |
|  | Immune disorders |
|  | Inflammatory bowel disease |
|  | Liver and biliary disease |
|  | Neuromuscular disease |
|  | Osteoporosis |
|  | Paralytic diseases/conditions |
|  | Skin ulcer |
|  | Substance abuse |
|  | Thyroid disease |

NOTE: Complexity designation is based on spending and morbidity.
SOURCE: Reproduced from Joynt et al., 2017

The most basic identifiers of high need are functional limitations. These include limitations in activities of daily living—self-care tasks that include dressing, bathing or showering, ambulating, self-feeding, grooming, and toileting—or instrumental activities of daily living that support an independent lifestyle, such as housework, shopping, managing money, taking medications, using the telephone, or being able to use transportation (Hayes et al., 2016c). If high-need populations are defined as individuals who have three or more chronic conditions plus functional limitations, roughly 11.8 million individuals age 18 or older (i.e., approximately 5 percent of the US adult population) would be classified as high-need individuals (Hayes, 2016).

Also relevant to the consideration of functional limitations and the way they are best managed is the interplay of physical capacity and mental or emotional status.

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[5] For this study, chronic diseases were identified using an approach that assigns ICD-9 diagnosis codes (first three digits) to the Agency for Healthcare Research and Quality's Clinical Classification System (Hwang et al., 2001; Paez et al., 2009).

For example, the following six circumstances represent compelling limitations and needs:

- Recovery from acute injury or surgery
- Intensive therapeutic interventions
- Chronic addiction-related impairment
- Long-term mobility impairment
- Long-term cognitive impairment
- Needs at the end-of-life

Any of these may represent a very high degree of functional impairment or limitation at any given time, but the nature, intensity, and combination of interventions required may vary considerably.

Determining an ideal definition for a high-need patient requires a delicate balance. A highly constrained definition will risk missing people, potentially depriving them of needed resources. On the other hand, casting an overly broad definition might include people who are not high-need and do not need additional resources. Abrams noted that basing identification of high-need patients exclusively on cost will miss many people, and if the focus is exclusively on chronic conditions, a large number of people may be identified whose chronic conditions are under control.

## THE OVERLAP OF HIGH-NEED AND HIGH-COST DEFINITIONS

Regardless of which definition is used to identify a high-need patient population, many of the characteristics of other definitions emerge from the analysis. For example, Jha, Figueroa, and colleagues analyzed Massachusetts claims data, looking broadly at high-cost patients in three categories: the non-Medicare population under age 65, the Medicare population, and the dual-eligible population (Joynt et al., 2017). The analyses of these data reveal that high-cost individuals have more chronic conditions than non-high-cost individuals (see Figure 2-2).

Moreover, the number of chronic conditions increases when moving from the non-Medicare under 65 to the Medicare and dual-eligible populations. High-cost patients are also more likely to have a higher number of frailty indicators (see Figure 2-3), which attempt to capture an individual's ability to engage in activities of daily living or their functional limitation status.

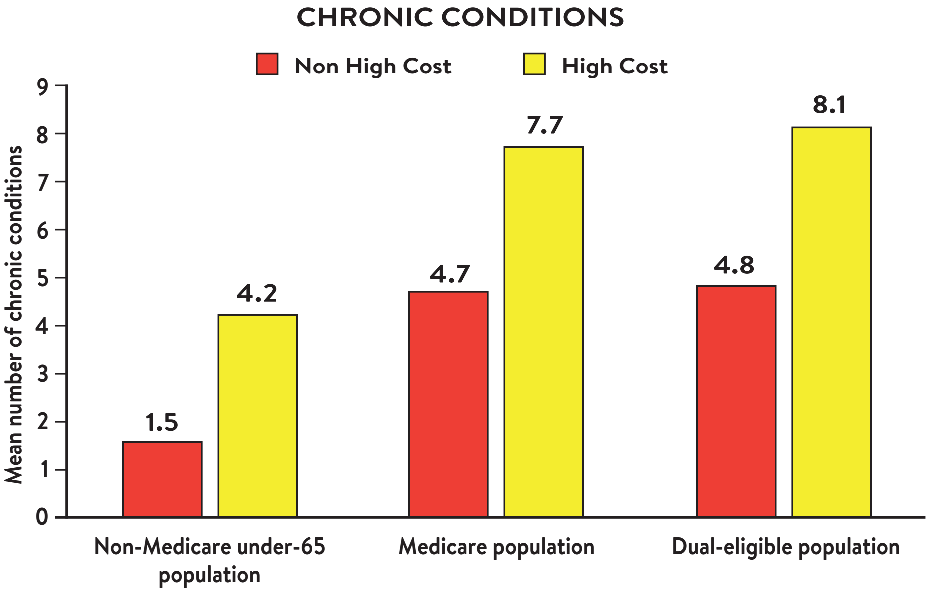

**FIGURE 2–2** | Mean number of chronic conditions among three groups of Massachusetts residents.
SOURCE: Reproduced from Jha presentation, January 19, 2016.

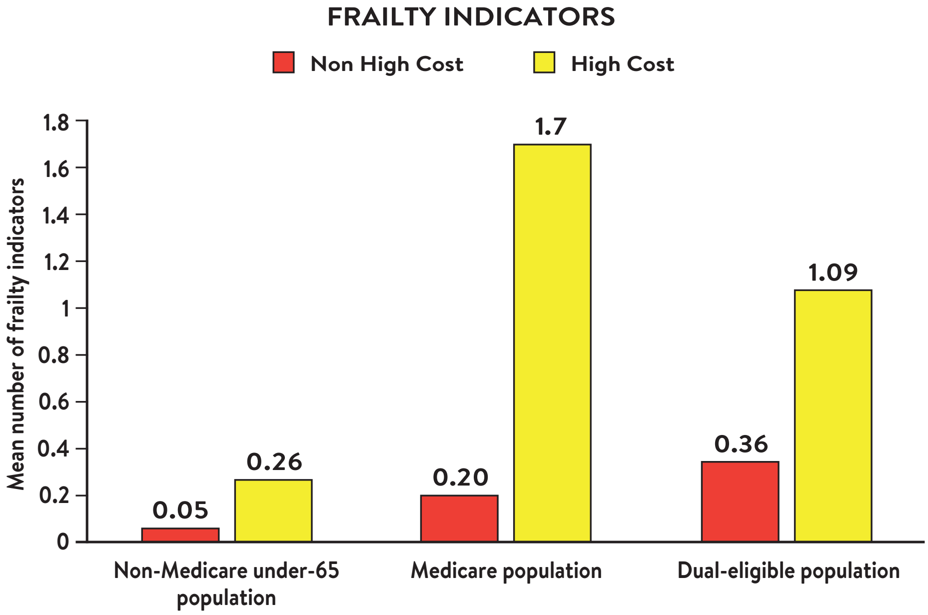

**FIGURE 2–3** | Mean number of frailty indicators among three groups of Massachusetts residents.
SOURCE: Reproduced from Jha presentation, January 19, 2016.

Likewise, by considering adults who have three or more chronic conditions and also have functional limitations, Hayes and colleagues at The Commonwealth Fund (2016) found that high-need adults averaged more than $21,000 a year in health care and prescription drug expenses, more than fourfold the average for all US adults, and almost three times more than for adults with three or more chronic conditions but no functional limitation. Out-of-pocket expenses for high-need adults averaged $1,669 per person per year, approximately three times higher than for the average US adult ($702) and 44 percent higher than for adults with three or more chronic conditions ($1,157). Annual spending by the top 5 percent of high-need individuals in terms of yearly expenditures exceeded $73,000 compared to nearly $27,600 by the top 5 percent of those with three or more chronic conditions and just under $21,000 by the average adult (see Figure 2–4).

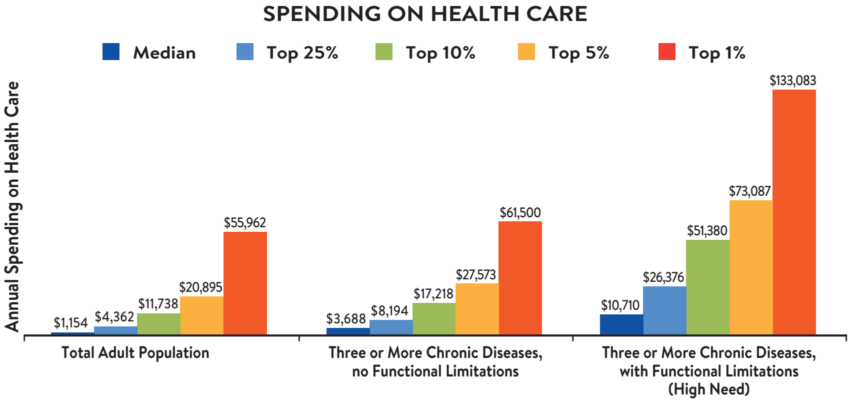

**FIGURE 2–4** | High-need adults had higher spending on health care than did those with three or more chronic conditions without functional limitations.

SOURCE: Reproduced from Hayes et al., 2016c

Concordant with their higher expenditures, these high-need individuals also made greater use of the emergency department; had more hospitalizations than did either the average adult or adults with multiple chronic conditions (see Figure 2–5); had more doctor visits; and had more paid home health care days. Finally, the high-need adults were more likely to incur and maintain high health care spending over a 2-year period than were either adults with three or more chronic conditions but no functional limitations or US adults overall.

It is necessary to use major characteristics identified and validated through various studies to develop a consistent and reliable definition of high-need. For example, taken together, total accrued health care costs, intensity of care utilized for a given period of time, and functional limitations could form a basis for defining and identifying a high-need population.

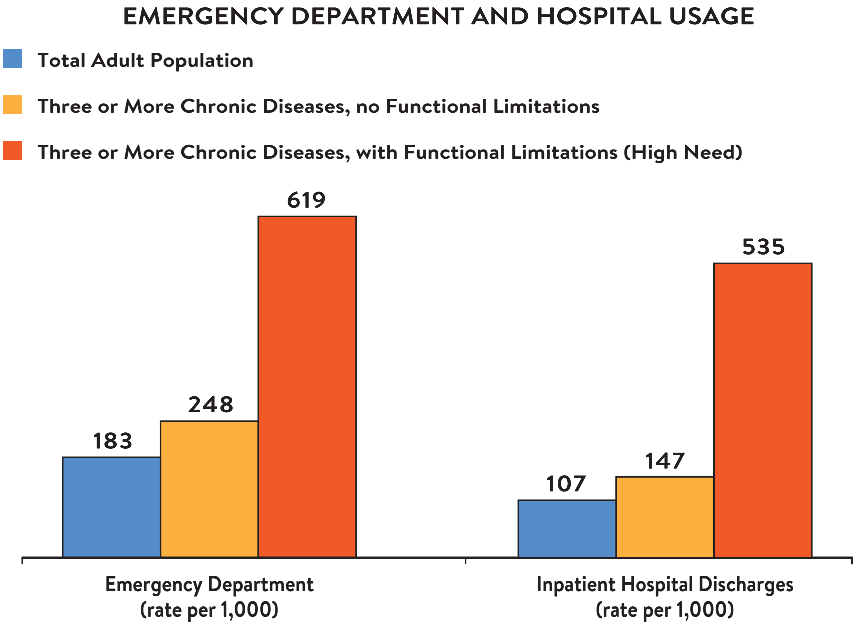

**FIGURE 2–5** | High-need adults have more emergency department visits and hospital stays.
SOURCE: Reproduced from Hayes et al., 2016c.

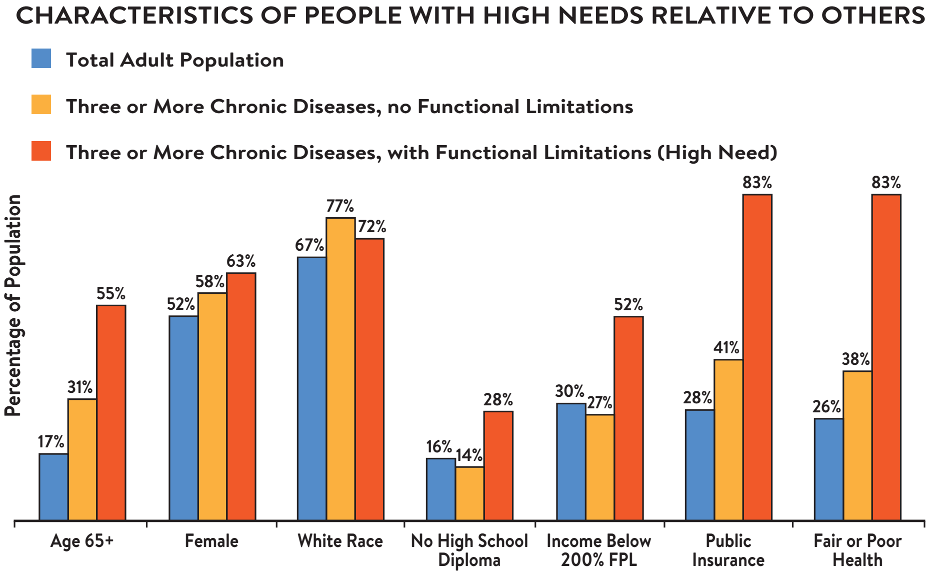

**FIGURE 2–6** | Demographic characteristics of high-need adults.
NOTE: FPL = federal poverty line.
SOURCE: Reproduced from Hayes et al., 2016c.

## THE IMPACT OF BEING A HIGH-NEED PATIENT

A rough understanding of the demographics of the high-need patient population does emerge from the research. According to analyses by The Commonwealth Fund and by the Agency for Healthcare Research and Quality (Cohen, 2015), high-need adults are disproportionately older, female, white, and less educated. Jha, Figueroa, and colleagues found the high-cost Medicare population to be disproportionately older, female, and nearly twice as likely to be dual-eligible (Joynt et al., 2017). Hayes and colleagues (2016) reported similar findings (see Figure 2–6). As a group, high-need patients are also more likely to be publicly insured (83 percent were insured under Medicare, Medicaid, or both), have fair to poor self-reported health, and have a behavioral or substance abuse condition. The average median household income for high-need adults ($25,668) was less than half of that of the overall adult population ($52,685), which was only slightly higher than the median household income for adults with three chronic conditions but no functional limitations ($52,499).

Functional limitations are key drivers of need. Adults with functional limitations tend to have higher health care expenses than adults with no such limitations (Olin and Dougherty, 2006; Zhang et al., 2015). Studies have also shown that adults with functional limitations are more likely to require care in a nursing home or assisted living facility (Foley et al., 1992; Gaugler et al., 2007). Functional limitations are also one type of patient-reported outcome that researchers believe represents an accurate assessment of an individual's health status and need for services (Wolinsky et al., 2011).

A substantial literature shows that, for the population as a whole, medical care influences only a relatively small portion of overall health (McGinnis et al., 2002; Taylor et al., 2015b) and that social services expenditures significantly impact population health outcomes (Bradley et al., 2011). Similarly, the importance of social services to the well-being of high-need patients also has a disproportionate impact relative to medical care. Inadequate availability of social services, such as a lack of stable housing, a reliable food source, or basic transportation, can clearly worsen health outcomes in high-need patients (Taylor et al., 2015b).

A reality for high-need patients is that their needs often go beyond care for their physical ailments. For example, a study of high-need patients in Washington State who are frequent users of the emergency department for their health care needs found that a majority of these individuals had an alcohol or a substance abuse disorder and mental illness (Mancuso et al., 2004). In fact, for some high-need individuals, alcohol and substance abuse disorders can be important contributors to chronic physical and behavioral health conditions, including hypertension, congestive heart failure, depression, anxiety, and other mental and physical disorders (Mertens et al., 2003; Mertens et al., 2005). Jha, Figueroa, and colleagues also found that a mental health diagnosis and an alcohol or a substance abuse diagnosis were both predictors of high-cost status (Joynt et al., 2017).

The results of a series of The Commonwealth Fund surveys further illustrate some of the challenges high-need individuals face in receiving adequate care. A 2014 survey, in which high-need individuals were defined as those 65 years or older with three or more chronic conditions or functional limitations, found that high-need individuals are particularly susceptible to a lack of coordination within the health care system (Sarnak and Ryan, 2016). Lack of coordination was determined to be in evidence when test results or records were not available at a medical appointment; there were duplicate tests orders; conflicting information was received from different providers; or a specialist lacked a patient's medical history or the patient's primary care provider was not informed about specialist care. Some 44 percent of high-need individuals reported a care coordination problem over the preceding 2 years compared to 27 percent of other older adults (Sarnak and Ryan, 2016). Additionally, more high-need adults reported that they thought a medical mistake was made in their treatment or care (13 percent) compared to the overall population of older adults (6 percent) and, despite the high level of insurance among this population, some 22 percent reported cost-related problems accessing care compared to 16 percent of the overall population of older adults.

A subsequent study by The Commonwealth Fund (Salzberg et al., 2016), based on an analysis of the 2009–2011 MEPS data, also found that being a high-need individual had a substantial impact on the care experience. According to this analysis, high-need adults were more likely to report having an unmet medical need—defined as forgoing or delaying needed medical care or prescription medication in the prior year—and less likely to report having good patient-provider communications compared to all adults or those with multiple chronic illnesses but no functional limitations. Unmet needs were greatest among high-need adults with private insurance and Medicaid. Easy access to specialists did not differ appreciably among the three groups, with approximately 50 percent of the individuals in each group reporting they had no trouble getting referred to a specialist when they believed they needed to see one.

One troubling finding from this analysis was that, although 93 percent of high-need adults have a usual source of care, only 46 percent of high-need adults reported that they had a usual source of care meeting the definition of a medical home in providing care that is comprehensive, accessible, and responsive to the patients' needs. This finding is important, the authors wrote, because medical homes benefit all patients and may especially help high-need patients improve outcomes and reduce spending. They also noted that, while low, the proportion of high-need patients receiving care in a medical home model was greater than the 36 percent of the general adult population who have a usual source of care meeting the definition of a medical home.

The most recent survey by The Commonwealth Fund included adults with two or more major chronic conditions, with or without functional limitations; individuals under 65 with a disability; and elderly individuals with multiple functional limitations (Ryan et al., 2016). The findings reiterated many of the conclusions from previous studies, but they also provided a focus on nonmedical aspects of care. For example, Ryan and colleagues (2016) stressed the social isolation and unmet social needs expressed by high-need patients, with nearly two-thirds articulating concern about such material hardships as housing, meals, or utilities. Additionally, of those high-need patients who reported a need for assistance with activities of daily living, only slightly more than one-third (38 percent) responded that they usually or always had someone available. Emotional counseling services were also cited as difficult to access, with less than half of those who may have needed them in the past 2 years able to set up an appointment in a timely fashion.

As Blumenthal and his colleagues stated in a discussion paper for the National Academy of Medicine's *Vital Directions for Health and Health Care* Initiative (Blumenthal et al., 2016a), addressing just the health care needs—or, for that matter, the social and behavioral health needs—of high-need patients in isolation is likely to be inadequate. As the authors of this paper concluded, "Health-system leaders, payers, and providers will need to look beyond the regular slate of medical services to coordinate, integrate, and effectively manage care for behavioral-health conditions and social-service needs for functional impairments to improve outcomes and lower spending." They also noted that the heterogeneity of the high-need population speaks to the implausibility of finding one delivery model or one program that meets the needs of all high-need patients, stating, "Payers and health systems may need to divide these patients into groups that have common needs so that specific complex care-management interventions can be targeted to the people who are most likely to benefit." Addressing clinical needs alone will not improve outcomes or reduce costs. Rather, it will also be necessary to address an individual's functional, social, and behavioral needs, largely through the provision of social and community services that today are not typically the province of health care delivery systems.

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# 3

# PATIENT TAXONOMY AND IMPLICATIONS FOR CARE DELIVERY

*Fictional patient vignette: Sarah is a 26-year-old woman who was recently involved in a car accident that left her paralyzed from the waist down. She was having a lot of trouble not only adjusting to her new reality but also navigating all of her new health care needs. Sarah had been a regular runner before the accident, and she had always been in good health, so she was largely unfamiliar with the ins and outs of doctors' offices. She turned to Nora for advice because it seemed as if this family friend was always either coming from or going to one doctor or another. Nora was in her mid-sixties and had been living with diabetes and heart disease for almost 20 years. Nora talked about how her nutritionist had helped her manage her diet, and how helpful her general practitioner was. Sarah was really hoping Nora would be able to help her understand how to navigate appointments with specialists and to recommend a way to get mental health care that wasn't readily covered by insurance. Even though Nora had tried to help, Sarah left their conversation feeling more confused. It was apparent that even though she and Nora each had a severe illness, their health care needs were incredibly different.*

The 12 million high-need patients in the United States are members of a diverse group of individuals affected by a range of medical, behavioral, and functional conditions and limitations (Hayes et al., 2016). Adding a layer of complexity to the effective care of high-need patients is the disproportionate impact of social circumstances—isolation, unemployment, lack of permanent or safe housing, and food insecurity, for example—on this population's health and well-being. Because of the varying needs and preferences of high-need patients, multiple tools and approaches are necessary to ensure that they receive the most appropriate care, with individual patient characteristics and preferences informing selection from among care models. Therefore, serving this heterogeneous population more effectively and efficiently requires construction of a taxonomy that has groupings based on shared characteristics and functional needs.

Drawing from discussions and common themes throughout the workshop series and the published evidence, this chapter reports on current approaches in—and evidence for—the application of taxonomies to the management of high-need patients as a means of improving their care. In particular, it provides an overview of the taxonomies used by two organizations, the Harvard T.H. Chan School of Public Health and The Commonwealth Fund, and guidance on the adoption and application of their key elements in practice. Given the profound role of social risk and behavioral health factors on the health of high-need patients, the intersection of these factors with the clinical domain receives particular attention. This chapter has been informed by two main sources: the insights gleaned from the workshop series presentations and discussions, and the assessment of an expert group of researchers, clinicians, and policy experts on the state of the evidence around the use of a patient taxonomy and their insights on how to advance its utility and adoption.

## PURPOSE AND OPERATION OF PATIENT SEGMENTATION

Segmenting target populations is not a novel concept. Marketing agencies divide populations and target potential strategies based on shared characteristics. In health care, triage has long been a foundational concept for ensuring that patients with the most urgent needs are given priority for treatment (Robertson-Steel, 2006), and it is an increasingly common protocol to sort cancer patients, for example, based on genomic characterization and various molecular markers to better inform therapeutic strategies (Konecny et al., 2016; Wang et al., 2014). Health system leaders can use a taxonomy to better understand their systems' patient populations and inform program planning, care team compositions and work flow, training, and infrastructure investments—leading to improved health and well-being outcomes and reduced costs.

Patient stratification strategies can take several forms. For instance, whole population risk stratification segments a health care system's entire patient population based on a projected risk of requiring care. Health systems create these risk profiles using various risk prediction algorithms that group their patients according to their utilization of services or specific health conditions, such as diabetes or high blood pressure. Health systems have developed whole population risk stratification methods to predict the anticipated costs for their specific patient populations. This approach, however, captures only a small fraction of the patients who could benefit from greater oversight or help in managing their conditions (Kansagara et al., 2011), in part because any technique based on the presumption of homogeneity is structurally limiting, and in part because it does not account for the socioeconomic characteristics and behaviors that affect health outcomes. For example, patients with diabetes have highly varied treatment requirements, and those with social challenges face still other requirements (Hostetter and Klein, 2015).

One of the earliest stratification systems was developed by Kaiser Permanente's cofounder Sidney Garfield, whose parsimonious categorization system comprised four groups for all patients: sick, well, worried well, and early sick (Garfield, 1970). These categories have since been revised: no chronic conditions, one or more chronic conditions, advanced illness, and extremely frail and near end of life (Zhou et al., 2014). The "Bridges to Health" model, first proposed by Lynn and colleagues at Centers for Medicare & Medicaid Services, divides the entire population into eight groups, from healthy to failing health near death (Lynn et al., 2007).

Patient segmentation using a taxonomy of the sort described in this chapter is driven by the goal of grouping the individuals in a health system's population by the care they need as well as how often they might need it. Segmentation involves separating the highest-risk patients (as determined using whole population risk stratification) into subgroups with common needs. A key operational concept for a useful taxonomy for patient segmentation is that it should account for the unique factors that drive an individual's health care needs.

Patient targeting goes one step further by looking within each segment to identify which patients need the highest intensity of complex care management. Both the literature and discussions with providers indicate that most successful care models, such as those discussed in Chapter 4, use targeting to refine further how they allocate resources more efficiently among their high-need patients.

## DEVELOPING A TAXONOMY

The need for greater precision is a natural product of the move toward value-based care, the emphasis on patient-engaged care, and the better insights emerging on what works best under different circumstances. While a general consensus exists on the benefits of segmenting high-need patients to target care (Vuik et al., 2016), work is still in progress on the optimal definitions of patient groups. For high-need patients in particular, we know that any taxonomy must take into account social risk and behavioral health factors at play—areas that need much elaboration (Johnson et al., 2015a; Kansagara et al., 2011).

Developing and implementing any taxonomy to guide service delivery to high-need patients requires solving numerous challenges. Segmenting high-need patients into meaningful subgroups requires access to information about their physical and behavioral conditions, their care utilization, and their social challenges. Most health information technology systems, however, do not support this type of integrated and streamlined data collection. The most readily available source of information is claims-based data, but these data offer a limited, condition-based perspective of patients and are not available in real time. Electronic health records (EHRs) can serve as a key source of data, but the design of many EHR systems does not enable them to collect data on behavioral issues, social challenges, or functional limitations (Institute of Medicine, 2014a, 2014b). The burden on health systems to collect, store, and properly use data are additional practical and logistical considerations.

A patient taxonomy that is effective in driving more productive treatment strategies for the high-need patient pool requires a delicate balance between precision and generalization. It is impractical to assume that every relevant feature can be captured and characterized for each patient. Although defining patient subgroups and sub-subgroups introduces more precision into categorizing patients, a taxonomy that contains too many subgroups is not feasible to implement. On the other hand, having too few groups is an oversimplification and does not meaningfully inform care planning and management. In addition, multiple payers and varied benefits packages pose administrative and operational hurdles for the implementation of any taxonomy. Medicaid is of particular concern because a disproportionate number of high-need patients are covered—at least in part—by the program, yet coverage varies widely from state to state. Chapter 5 covers this subject in more detail.

## IDENTIFYING SEGMENTS

To address the challenge of creating an actionable stratifying tool, the taxonomy workgroup developed a conceptual starter taxonomy. In the third workshop, Melinda Abrams, vice president for delivery system reform at The Commonwealth Fund and chair of the taxonomy workgroup, explained that the medical aspects of this taxonomy build largely on the work of the Harvard T.H. Chan School of Public Health group, led by Ashish Jha and Jose Figueroa.

Jha, Figueroa, and colleagues conducted a set of analyses of Massachusetts claims data to empirically derive mutually exclusive subpopulations of high-need patients in three distinct populations: the non-Medicare population under age 65, the Medicare population, and the dual-eligible population (Joynt et al., 2017). While claims data are often maligned, said Jha in the second workshop, in his opinion they are currently the best way to draw a picture of high-need, high-cost individuals in the United States. Through a yearlong iterative process, with input from clinical leaders and working closely with a group led by Gerard Anderson at Johns Hopkins University, the Harvard team defined the subpopulations with a noniterative, hierarchical categorization that assigned patients to groups of increasing complexity. The resulting six subpopulations, in the order in which individuals are classified, are listed as follows: under-65 disabled who are not included in the non-Medicare under-65 population; frail, with two or more frailty indicators; major complex chronic, with two or more chronic conditions from a list of nine major chronic diseases that account for the majority of spending and morbidity; minor complex chronic, with one chronic condition from the list of nine major chronic diseases; simple chronic, which includes less severe conditions such as hyperlipidemia; and relatively healthy. Individuals are assigned to no more than one of these groups by first determining whether the patient is under 65 or 65 or older. Individuals under 65 are assigned to the first category. Of those individuals age 65 or older, those with two or more frailty indicators are assigned to the frail elderly group. Last, the remaining individuals are assigned to one of the final four categories based on the number of chronic conditions they have (Joynt et al., 2016).

Jha noted that this may not be the ideal way to segment the population, but he believes it is a reasonable approach. One limitation is that it does not specifically address patients with advanced illness or those patients at the end of life. Jha added that it would be important to examine other populations, particularly children, and try to understand the characteristics of providers that do better with one subpopulation as compared to another.

Building on the Harvard group's work and an analysis of Medical Expenditure Panel Survey (MEPS) data by Anderson and colleagues at Johns Hopkins (Roberts and Anderson, 2014), Abrams and collaborators at The Commonwealth Fund looked at how to characterize some of the issues and challenges facing high-need and high-cost patients. As explained by Melinda Abrams during the second workshop, the Commonwealth Fund team examined segmentation and programmatic literature, such as program evaluations and case studies, as a "reverse engineering" strategy to identify patient groups based on how existing programs identified and segmented patients. The team also conducted interviews with health system leaders, program experts, and payers, and they collaborated with an advisory group to define 11 specific patient groups, including a standalone segment for individuals with social risk and behavioral health factors. After further consideration and analysis, Abrams and colleagues merged some of these segments into six subpopulations: under-65 disabled, advancing illness, frail elderly, complex chronic conditions, multiple chronic conditions, and children with complex needs.[6] At any given time, patients are assigned to just one of these six segments and their designation is determined by their medical needs that are driving their health care costs. For example, a frail elderly individual with multiple chronic conditions would be assigned to the frail elderly segment because the frailty indicators are what is driving medical needs and ultimately costs. However, over time, as their medical needs change, patients may shift between segments.

In her presentation at the second workshop, Abrams explained some of the logic behind merging categories and settling on these six subpopulations. For example, for people with functional limitations, it did not matter whether they were under or over age 65. The two larger subcategories that made more sense practically were under-65 disabled and frail elderly. With regard to Jha's subcategories of major complex chronic, minor complex chronic, and simple chronic, Abrams said those were based on elegant work, but for practical purposes, those were too finely divided. As a result, The Commonwealth Fund team merged them into two categories: complex chronic conditions and multiple chronic conditions. Additionally, the stand-alone category of patients with social risk and behavioral health factors actually spanned all of the medical categories. Abrams noted that while the segmentation literature is small and greatly variable in terms of quality and rigor, it did suggest some additional segments beyond Anderson's and Jha's work, including advanced illness, end-of-life, and children with complex conditions (Lynn et al., 2007; Zhou et al., 2014).

Addressing some of the limitations of this work, Abrams said there are multiple plausible segmentation strategies, and the approach taken depends on the audience and the purpose. In addition, this work was based on limited data sources. "We need more information from patients, social services agencies, and interoperable systems," said Abrams during the second workshop. She noted, too, that segmentation is, at this stage, inherently imprecise, and she emphasized the need for more comprehensive data on patients that would be more informative than claims data, as was stated in a 2014 Institute of Medicine report (Institute of Medicine, 2014a).

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[6] This taxonomy was presented by Abrams at the second workshop. More information can be found at http://www.bettercareplaybook.org/resources/overview-segmentation-high-need-high-cost-patient-population (accessed on March 29, 2017).

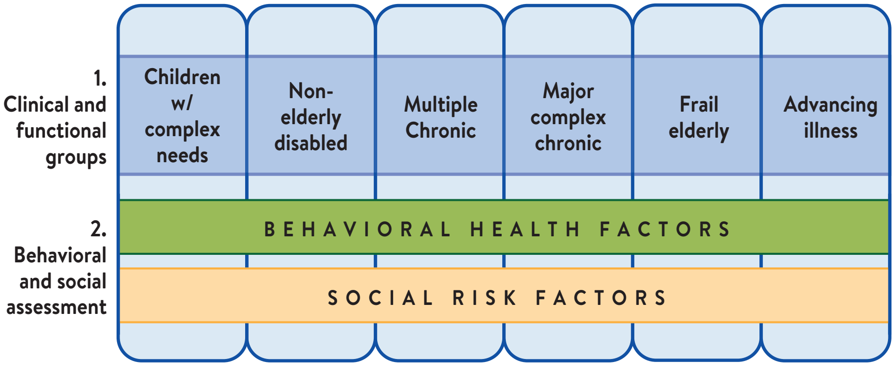

**FIGURE 3–1** | A conceptual model of a starter taxonomy for high-need patients.
NOTE: For this taxonomy, functional impairments are intrinsically tied to the clinical segments.
SOURCE: Adapted from Abrams presentation, October 21, 2016

## A CONCEPTUAL “STARTER” TAXONOMY

While still theoretical, taxonomies such as the ones Jha and Abrams laid out are medically oriented approaches. Given the availability of data, grouping patients according to medical characteristics is a feasible starting point for most health systems: the patient groups are clinically meaningful and carry implications for care delivery, and health systems can access information needed to identify and assign patients to groups via claims and EHR data. Assigning a patient to one of these groups tells only part of the patient story, however, and may neglect other characteristics and factors that are key drivers of functional limitations and health care spending. Here, the taxonomy workgroup offers a conceptual “starter” taxonomy for high-need patients (see Figure 3–1) that builds on the ones Jha and Abrams described to illustrate the incorporation of functional, social, and behavioral factors into a medically oriented taxonomy, not as independent segments but as factors that influence the care model or care team composition most likely to benefit a particular patient in one of the segments.

Fundamentally, this starter taxonomy aims to be actionable to inform care and workforce decisions and to reflect the reality of the data that are available to health system leaders. Table 3–1 describes the criteria for each group.

Because the segments were based largely on the work of both the Harvard and The Commonwealth Fund teams, there are limitations to clinical grouping that arise from the fact that the categorization was informed by the structure of limited datasets. For example, while children with complex needs are included, other high-risk groups worth further consideration, such as high-risk pregnancies, adolescents, and those who have suffered a traumatic event such as a brain or spinal injury, were not specifically designated as a segment. In addition, because identification of functional impairment is intrinsically tied to the clinical segments, the segments may not capture the complete diversity of functional limitations.

**TABLE 3–1** | Clinical Group Features

| CLINICAL GROUP | FEATURES |
|---|---|
| Children with complex needs | Have sustained severe impairment in at least four categories together with enteral/parenteral feeding or sustained severe impairment in at least two categories and requiring ventilation or continuous positive airway pressure[A] |
| Non-elderly disabled | Under 65 years and with end-stage renal disease or disability based on receiving Supplemental Security Income |
| Multiple chronic | Only one complex condition and/or between one and five noncomplex conditions[B,C] |
| Major complex chronic | Two or more complex conditions or at least six noncomplex conditions[B,C] |
| Frail elderly | Over 65 years and with two or more frailty indicators[D] |
| Advancing illness | Other terminal illness, or end of life |

[A] Categories for children with complex needs are: learning and mental functions, communication, motor skills, self-care, hearing, vision

[B] Complex conditions, as defined in (Joynt et al., 2016), are listed in Table 2–1.

[C] Noncomplex conditions, as defined in (Joynt et al., 2016), are listed in Table 2–1.

[D] Frailty indicators, as defined in (Joynt et al., 2016), are gait abnormality, malnutrition, failure to thrive, cachexia, debility, difficulty walking, history of fall, muscle wasting, muscle weakness, decubitus ulcer, senility, or durable medical equipment use.

This starter taxonomy can, however, provide guidance for health system leaders and payers on how to embed social risk factors, behavioral health factors, and functional limitations in a taxonomy for high-need patients. Patients would first be assigned to one clinical segment based on what medical needs are driving their health care costs, with follow-on assessment of behavioral health issues and social services needs to determine the specific type of services an individual requires. For example, the major complex chronic conditions patient segment would include patients who simultaneously have diabetes, heart disease, and kidney disease, suggesting that a care team should include a complex care manager. If some of the patients also have severe depression, bipolar illness, or other behavioral health conditions, their care team would require someone with training in behavioral health issues. If the patient subpopulation also has unstable housing and sources of food, the care team would require personnel with expertise in addressing housing and food security. The model also assumes that the medical, behavioral, and social needs of patients will change. For example, an individual patient could move from frail elderly to advancing illness, which would suggest shifting resources from medical care to hospice care.

## HIGH-IMPACT SOCIAL RISK AND BEHAVIORAL HEALTH VARIABLES

Two important components of this starter taxonomy are the social risk and behavioral health factors that affect a patient's health and influence the specific needs of each individual in a particular segment defined by medical and functional status. A review of the literature on social domains that affect care, insights from planning committee members and outside experts, and a survey of available resources (such as the National Association of Community Health Center's Protocol for Responding to and Assessing Patients' Assets, Risks, and Experiences [PRAPARE], a tool for assessing their patients' social determinants of health),[7] produced a list of four high-impact variables in the social services domain which were determined to be the most likely to affect care delivery decisions (see Table 3–2).

**TABLE 3–2** | High-Impact Social Variables

| VARIABLE | CRITERIA/MEASUREMENT | SOURCES |
|---|---|---|
| 1. Low socioeconomic status | Income and/or education | Adler et al., 1994; Bengle et al., 2010; Bisgaier and Rhodes, 2011; Metallinos-Katsaras et al., 2012; Vijayaraghavan et al., 2011 |
| 2. Social isolation | Marital/relationship status and whether living alone | Ennis et al., 2014; House, 2001; Seeman, 1996 |
| 3. Community deprivation | Median household income by census tract; proximity to pharmacies and other health care services | Cutts et al., 2011; Wang et al., 2013; Bartley et al., 2003 |
| 4. Housing insecurity | Homelessness; recent eviction | Cutts et al., 2011; Schanzer et al., 2007 |

An analysis of MEPS data conducted by Claudia Salzberg at Johns Hopkins University for The Commonwealth Fund (Hayes et al., 2016b) shows the importance of behavioral health factors, as she found that 56 percent of high-need adults, or approximately 6.7 million people, have a behavioral health condition (such as depression, anxiety, or alcohol- or substance-related disorders) or a severe mental

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[7] For more information, see http://nachc.org/research-and-data/prapare/toolkit (accessed on March 9, 2017).

illness (such as schizophrenia) as one of their three or more chronic conditions. Salzberg also found that high-need individuals with behavioral health conditions made 27 percent more visits to hospital emergency departments, used 35 percent more home health care days, were more likely to have unmet medical needs, and were less likely to have easy access to specialists or have good patient-provider communication compared to high-need individuals who did not have a behavioral health condition. Moreover, 34 percent of high-need adults with a behavioral health condition remained in the top 10 percent of spending over a 2-year period compared to 23 percent of high-need adults without a behavioral health condition.

The subpopulation of high-need adults with a behavioral health condition is relatively younger; is more likely to be white, female, and less educated; is more likely to have lower income and fair or poor health status; and is more likely to be insured by Medicaid, either alone or in combination with Medicare. A list of four high-impact behavioral variables, which were determined to be the most likely to affect care delivery decisions (see Table 3–3), was developed by a review of the literature, insights from planning committee members and outside experts, and a survey of available resources.

**TABLE 3–3** | High-Impact Behavioral Variables

| VARIABLE | CRITERIA/MEASUREMENT | SOURCES |
|---|---|---|
| 1. Substance abuse | Excessive alcohol, tobacco, prescription and/or illegal drug use | Doll et al., 2004; Eisenhauer et al., 2011; Fagerstrom, 2002; Lai and Huang, 2009; Makela et al., 1997; Ryan, 1995 |
| 2. Serious mental illness | Schizophrenia and other psychotic disorders, bipolar, major depression | De Hert et al., 2011; Katon, 2003 |
| 3. Cognitive decline | Dementia disorders (Alzheimer's, Parkinson's, vascular dementia) | Schulz and Sherwood, 2008; Zeisel et al., 2003 |
| 4. Chronic toxic stress | Functionally impairing psychological disorders or conditions (e.g., PTSD, ACE, anxiety) | Brunner, 1997; Cohen et al., 2007; King and Chassin, 2008; Kivimaki et al., 2002; Schnurr and Green, 2004; Stansfeld et al., 2002; Taft et al., 2007 |

NOTE: ACE = Adverse Childhood Experiences; PTSD = Post-Traumatic Stress Disorder

For both lists of variables, social risk and behavioral health, the criteria for being "high-impact" included whether a variable had the potential for impact on both health and the type of care delivered, whether adding the variable would capture an otherwise missed patient population, and whether the variable would alter a person's status in the taxonomy in a manner that would be linked readily to clinical care. Some variables, such as race and ethnicity (Jackson et al., 2016; Larney et al., 2016; Morton et al., 2016; Segal et al., 2016) and incarceration (Wang et al., 2013), can affect health but are rooted in deeper systemic issues that are beyond the scope or purpose of this taxonomy. A variable such as health literacy can have a significant effect on health (Baker et al., 2007; Bennett et al., 2009; Institute of Medicine, 2004; Schillinger et al., 2002; Taylor et al., 2016), but the inventory of effective care models discussed in Chapter 4 does not directly address health literacy. As Abrams explained, the committee thought about the process of selecting the four social and the four behavioral health variables in terms of the taxonomy and its ability to match with the care model exemplars.

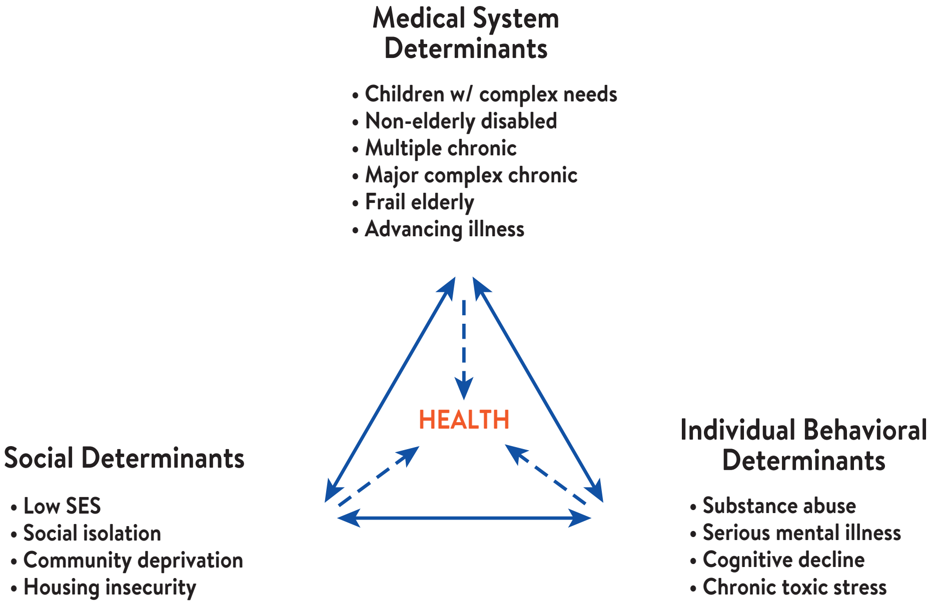

**FIGURE 3–2** | A framework for health with all of the factors that would go into an ideal taxonomy.

NOTE: SES = Socioeconomic status.

SOURCE: Reproduced from Abrams presentation, October 21, 2016.

## ADVANCING THE USE OF A TAXONOMY

Categorizing high-need patients into smaller groups around which the delivery system can shape appropriate resources and strategies is sensible, given their heterogeneous medical needs, the varying impact of behavioral health issues and social factors on their functional abilities, and the high cost of caring for these individuals, as described in Chapter 2 (Boyd et al., 2010; Cohen and Uberoi, 2013; Stanton and Rutherford, 2006). In the third workshop, Abrams described an ideal patient taxonomy—one not yet achieved—that could provide a holistic assessment of how care should be targeted and delivered to improve the health of high-need individuals (see assessment of a patient's medical, behavioral, functional, and social characteristics to inform Figure 3–2). Developing such an approach for each patient segment, however, requires the integration of systems that capture physical, behavioral, and social information. Currently, this level of systems integration is only just starting to take place.

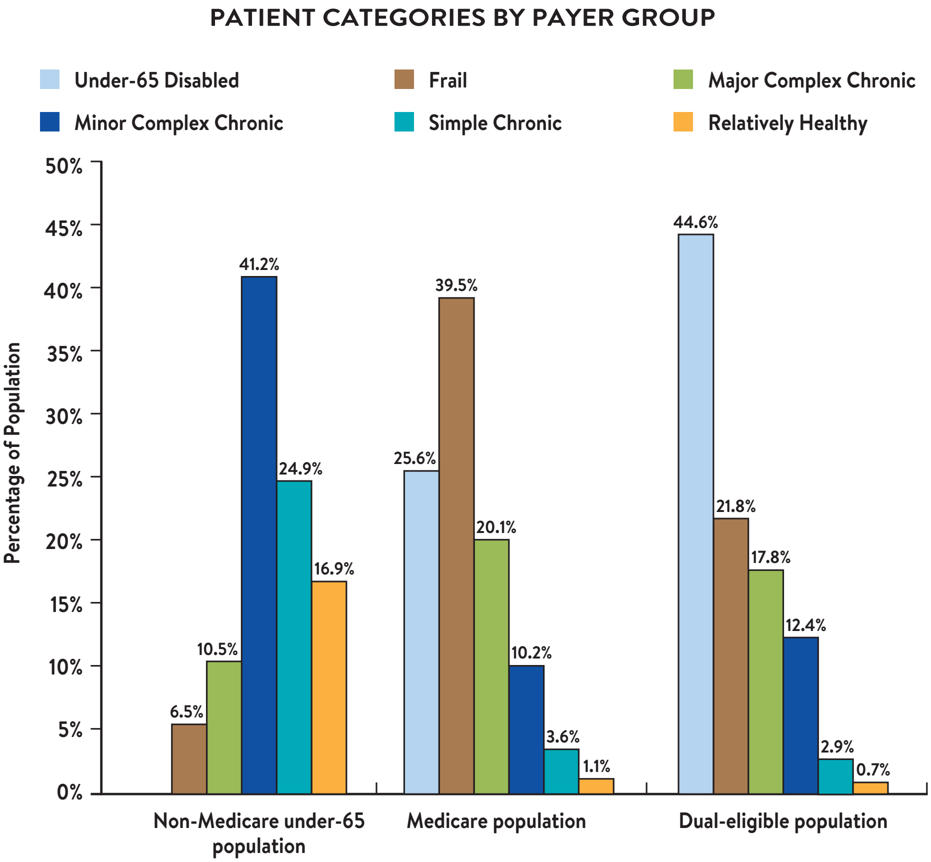

**FIGURE 3–3** | Differences in the proportion of high-cost patients in six patient categories for three distinct payer groups.

SOURCE: Adapted from Jha presentation, January 19, 2016

Even with the proposed conceptual models, though, it is possible for health system leaders and payers to determine practical information about their high-need population segments. In the second workshop, Jha provided an example of the type of useful indicators a medically grounded taxonomy could produce. When Jha, Figueroa, and colleagues analyzed spending patterns among the three payer groups and six subpopulations of patients used in their taxonomy, the analysis revealed some surprises (see Figure 3–3), Jha said. For example, in the commercially insured, under-65 non-Medicare population, the majority of spending is by individuals in the minor complex chronic and simple chronic segments. Spending in the Medicare population differs greatly, he noted, with the frail and under-65 disabled accounting for the bulk of the high-cost patients. In the dual-eligible population, the under-65 disabled segment accounts for nearly half of the high-cost patients.

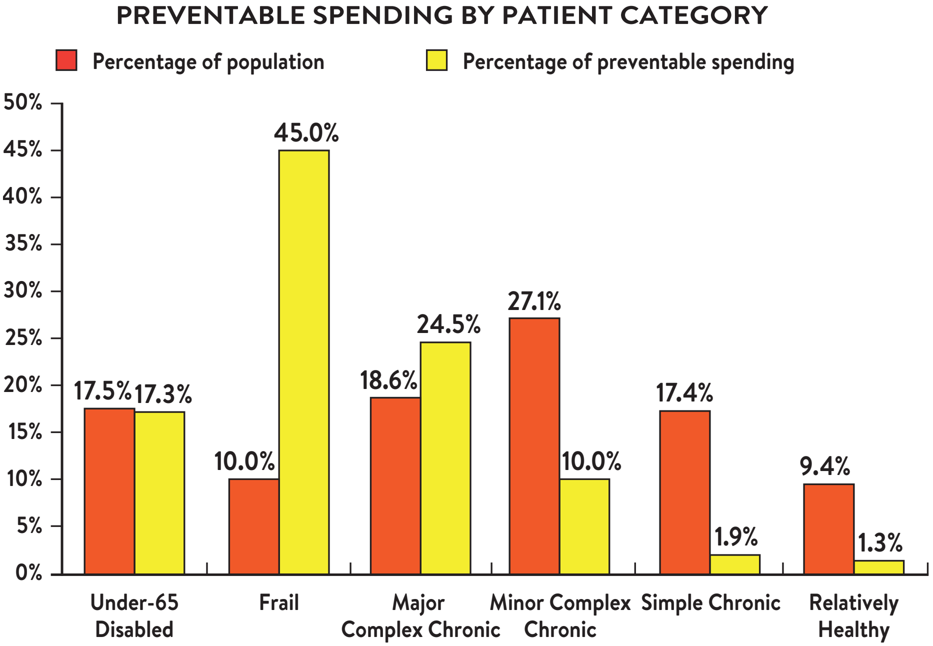

**FIGURE 3–4** | Preventable spending by patient group in the Medicare population.
SOURCE: Reproduced from Jha presentation, January 19, 2016.

The Harvard team also examined preventable spending among all of the Medicare patients included in the Massachusetts dataset (see Figure 3–4). For a definition of preventable, they looked at ambulatory care-sensitive conditions. For ambulatory care-sensitive conditions, most of the spending is by the frail elderly, who account for 10 percent of the total Medicare population and 45 percent of all hospitalizations for ambulatory care-sensitive conditions.

Jha discussed another analysis showing the mean distributional spending among high-cost patients (see Figure 3–5). For example, average annual inpatient spending by a high-cost under-65 disabled individual is $15,947, and outpatient spending accounts for another $13,344, but the biggest cost for these individuals is Medicare Part D spending on drugs, which is $23,003 (Joynt et al., 2016). In contrast, Part D spending by the frail elderly represents a small proportion of total spending, with inpatient care and postacute care and long-term care being the big-ticket items for this group (Joynt et al., 2016).

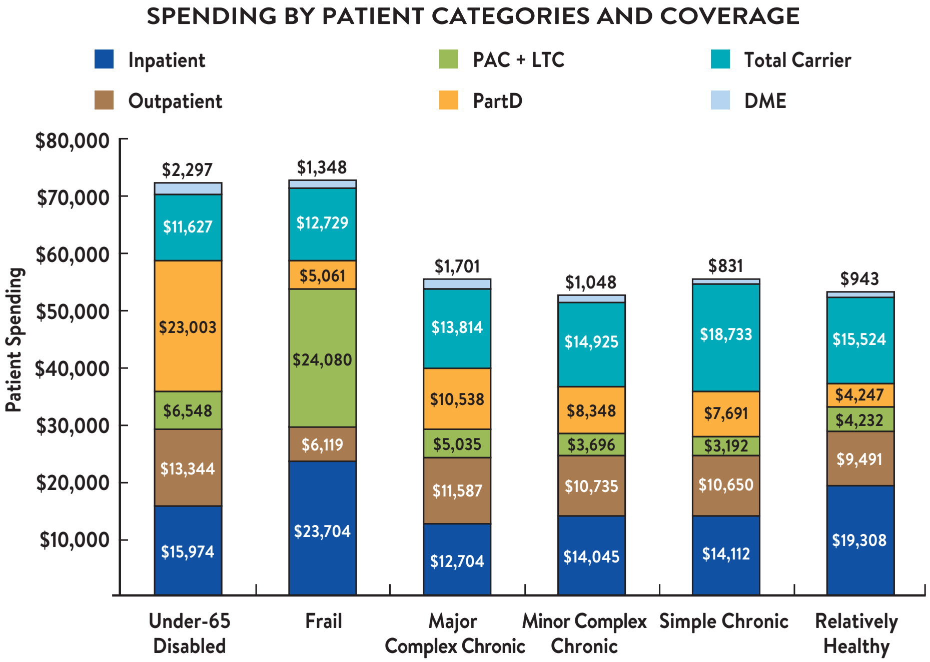

FIGURE 3–5 | High-cost Medicare patients' distributional mean spending by patient category.
NOTE: DME = Durable Medical Equipment; PAC = Post-Acute Care; LTC = Long-Term Care
SOURCE: Adapted from Joynt et al., 2016.

This sort of distributional analysis, Jha explained, highlights the different spending profiles of the subpopulations and the need for health system leaders and payers to think carefully about how to address the expense of caring for these different types of high-cost patients. Segmentation offers opportunities for payers to more effectively target finite resources and improve outcomes, which ideally will reduce the total cost of care.

In this way, a formal taxonomy can ideally inform the development of care plans and the allocation of resources to the interventions, assisting in a threefold aim to improve the care match with patient goals, improve patient outcomes, and improve the efficiency of care delivery. Highlighting the needs and use profiles of the various subpopulations, a taxonomy can help health care system leaders and payers make informed investments in a program, care team composition, work flow, training, and infrastructure. In Chapter 4, we discuss some models—many focused on specific segments of the high-need population—that health care system leaders can implement or look to for best practices. For a taxonomy to serve those purposes, however, it is necessary to align efforts across health systems and payers to ensure that payment structures incentivize, rather than hinder, effective care—a subject discussed in more detail in Chapter 5.

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# 4

# CARE MODELS THAT DELIVER

*Fictional patient vignette: Raphael was glad that emergency surgery to fix a hip fracture in his 70-year-old mother, Gloria, had gone so well. But he was unsure of what to do afterward. Gloria had steadily advancing dementia, and she wouldn't be able to take care of herself after surgery, which meant that wound care and other recovery duties would fall on Raphael and his wife, Maria. When Gloria first returned home, Raphael and Maria struggled. Neither had any medical background beyond Maria's CPR training, and they weren't sure how to tell if Gloria's surgery site was healing correctly. Their insurance offered to pay for a visiting home nurse, however, who came twice a day to change Gloria's bandages and to check on her. When Gloria began to show signs of infection, the nurse recognized it before Raphael even knew something was wrong, and she was able to have it treated quickly. She also taught them about community resources—which their insurance would cover—that would help them handle Gloria's dementia symptoms. Raphael was incredibly thankful for the service and unsure how they would have managed without it.*

For a patient taxonomy to be actionable, it needs to inform the care of high-need patients by identifying key care elements that align with the needs for specific patient populations. At the same time, providing effective and sustainable care for high-need individuals within those populations requires identifying attributes and features of care models shown to improve the experience and outcomes of the patients and reduce the cost for individual patients and the communities in which they live (Berwick et al., 2008). To examine how these two critical components relate, speakers at the first and second workshops discussed the intersection of models of care and taxonomies. Additionally, a review of evidence syntheses and other literature on care models for high-need patients identified promising models, classified areas of convergence, and produced a list of attributes holding the most potential to improve outcomes and to lower costs.

## CHARACTERIZING SUCCESSFUL MODELS

Defining a successful care model starts with the goals of the stakeholders involved. In general, successful care models foster effectiveness across three domains: health and well-being, care utilization, and costs. The success of even the best care models depends on the particular needs and goals of the patient a model intends to serve, and those will vary even within segments of the high-need population. Dual-eligible patients, for example, are often considered a high-need group or segment as a whole, but as Randall Brown from Mathematica Policy Research explained at the second workshop, nearly 40 percent of this population does not need extensive services (see Figure 4–1). Even among those dual-eligible individuals who have severe chronic illnesses, only some require long-term support services that need to be integrated and coordinated. Each of these different dual-eligible subpopulations benefits from different managed care models or fee-for-service models.

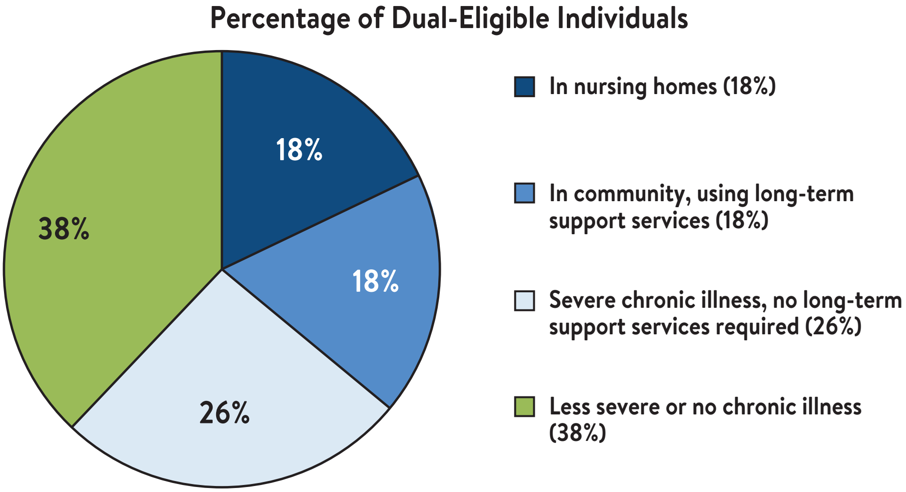

**FIGURE 4–1** | Variations in the needs of dual-eligible individuals.
SOURCE: Adapted from Brown presentation, January 19, 2016

Different high-need segments will require different services and workforce competencies. A patient taxonomy may help define the competencies needed in the workforce, noted David Atkins from the Department of Veterans Affairs during workshop 2, but there are likely to be generalizable aspects that cut across the different segments. "As we look at these segments and map successful programs to the different populations, we may find [that] two segments that look different from a program perspective are actually served by similar looking programs or that there are common elements in each of the programs that address the needs of these segments."

At the third workshop, Arnold Milstein of Stanford University noted the profound changes that models of care have undergone over time. "It wasn't that long ago that there were five boxes that defined America's care models. You could either end up in the office of a surgeon, a medical doctor, or an internist, or you could end up in a hospital general surgical ward or a hospital general medical ward, and maybe an OB ward, but that was it. Over the last 100 years, as medical knowledge and health care delivery science have begun to advance, there has been a lot of evolution and customization, most of it with very good results."

Milstein's statement is borne out by the increasing abundance of care models available for high-need patients. As the number of models has grown, researchers have reviewed and classified these models and their attributes to determine how and why different models realize success (Anderson et al., 2015; Berry-Millett and Bodenheimer, 2009; Bleich et al., 2015; Brown et al., 2012; Cohen et al., 2015; Davis et al., 2015; McCarthy et al., 2015; Nelson, 2012; Salzberg et al., 2016; Taylor et al., 2015a; Zurovac et al., 2014). These reviews and syntheses span the heterogeneous populations and settings for which the models are designed.

Synthesizing areas of convergence in the evidence base for the wide variety of models, attributes, and implementation techniques in the third workshop, Milstein outlined four dimensions or areas of focus that constitute a possible analytical framework for identifying successful care models: (1) focus of service setting; (2) care and condition attributes; (3) delivery features; and (4) organizational culture. In the remainder of the chapter, a selection of the supporting research for each dimension of this framework is provided, together with a summary of a conceptual mapping exercise to illustrate how a patient taxonomy may inform care or care model selection. In addition, the chapter presents an example of implementing a population health approach to delivering primary care.

## FOCUS OF SERVICE SETTING

The first dimension of the framework categorizes the service setting of models. In general, the most successful programs for managing high-need individuals focus on either a targeted age group with broad combinations of diagnoses or individuals classified as high-utilizers. Models tend to fall into several broad categories related to care settings: enhanced primary care, transitional care, and integrated care. In a synthesis review they conducted in 2009 (Berry-Millett and Bodenheimer, 2009), Berry-Millett and Bodenheimer found a similar categorization of care management by setting. Their categories included primary care, vendor-supported care, integrated multispecialty groups, hospital-to-home systems, and home-based care.

A review of evidence for successful models of comprehensive care for older adults with chronic illness identified 15 types of models, including comprehensive patient care, pharmaceutical care, and preventive home visits (Boult et al., 2009b). Each type of model had different levels of supporting evidence for measures of success such as quality of care, increased functional autonomy, and use or cost of health services. A separate study by Brown and colleagues found the strongest evidence for reductions in hospital use and cost of care from select interdisciplinary primary care models, care coordination programs focused on high-risk patients, chronic disease self-management programs, and transitional care interventions (Brown et al., 2012).

Grounded primarily in the typology of successful care models for older adults with chronic conditions (Boult et al., 2009b) and The Commonwealth Fund's evidence synthesis of care models for high-need patients (McCarthy et al., 2015), the framework presented lays out nonmutually exclusive categories of promising care models (see Box 4–1).

The primary and transitional care settings are the two key categories because of strength of the evidence base and potential for spread and scale in today's clinical practices. Additionally, interdisciplinary and enhanced primary care—two care model categories that are often distinct in the literature—are combined because overlapping and indistinguishable definitions suggest a single category for primary care models. The three subcategories of primary care—interdisciplinary primary care, care and case management, and chronic disease self-management—are highlighted but are not mutually exclusive. For example, Care Management Plus is a successful example of an interdisciplinary primary care model, but there is clear overlap with a care management approach (Brown et al., 2012).

Furthermore, there is a specifically emphasized category for models that features the integration of medical, social, and behavioral services because of the importance and impact that engaging factors outside of the medical care system has on improving care for high-need patients. Meaningful care often requires alignment, coordination, and cooperation by the care system with social and behavioral health programs and services. For example, during the first workshop Robert Master, of Commonwealth Care Alliance, explained that a challenge

## BOX 4–1

### *Service Setting and Focus of Successful Care Models*

- **Enhanced primary care**. Programs in the primary care setting defined by the use of supplemental health-related services that enhance traditional primary care and/or employ a team-based approach, with a provider and at least one other person.
  - **Interdisciplinary primary care**. A team comprising a primary care provider and one or more other health care professionals (e.g., nurse, social worker, rehabilitation therapist) who communicate frequently and provide comprehensive primary care *(e.g., Guided Care, GRACE, IMPACT, PACE, or Care Management Plus)*.
  - **Care and case management**. Collaborative models in which a nurse or social worker helps patients with multiple chronic conditions and their families assess problems, communicate with providers, and navigate the health care system *(e.g., Integrated Care Management Program at Massachusetts General Hospital)*.
  - **Chronic disease self-management**. Structured, time-limited interventions designed to provide health information to patients and engage them in actively managing their chronic conditions *(e.g., Chronic Disease Self-Management program at Stanford)*.
- **Transitional care**. Facilitate safe and efficient transitions from the hospital to the next site of care (e.g., alternative health care setting or home). Interventions are usually led by a nurse, known as a "transition coach," who provides patient education about self-care, coaches the patient and caregiver about communicating with providers, performs a home visit, and monitors the patient *(e.g., Naylor Transitional Care Model)*.
- **Integrated care**. Cross-disciplinary models which engage or focus on social risk interventions and behavioral health services in addition to medical care and functional assistance *(e.g., IMPACT or Camden Coalition)*.

NOTE: Categories are not mutually exclusive. For more information on the Integrated Care Management Program at Massachusetts General Hospital, see http://www.massgeneral.org/integrated-care-management/. For more information on Camden Coalition, see https://www.camdenhealth.org/national-center/.

SOURCES: (Bleich et al., 2015; Boult et al., 2009)

with the One Care population[8] is that many within it have never been nor likely ever will be bonded to a primary care practice, given the large number of people in this population with persistent mental illness, intermittent homelessness, and

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[8] One Care is a program started in October 2013 by Commonwealth Care Alliance. At the time of the first workshop, 10,300 dual-eligible individuals under age 65 with disabilities were enrolled. Some 42 percent, most of whom enrolled voluntarily, have serious physical, developmental, or mental-illness-related disabilities. Additional information about this program is available at: http://www.commonwealthfund.org/publications/case-studies/2016/dec/commonwealth-care-alliance.

concurrent substance abuse. For many segments of high-need patients, these highly integrated models can be the most effective, especially for populations with high levels of social or behavioral health needs.

## CARE AND CONDITION ATTRIBUTES

While the details of any given model will be guided by specific conditions, successful care models share many common care attributes—the second dimension of the framework. Research has identified attributes that lead to successful models. For example, in their evidence synthesis McCarthy and colleagues (McCarthy et al., 2015) found several attributes to be widespread in successful models, including targeting patients likely to benefit from the intervention; coordinating care and communication among patients and providers; promoting patient and family engagement in self-care; comprehensively assessing patients' risks and needs; providing appropriate care in accordance with patients' preferences; relying on evidence-based care planning and patient monitoring; and facilitating transitions from the hospital and referrals to community resources.

Targeting patients who are most likely to benefit from an intervention, based on a comprehensive patient assessment and subsequent segmentation, is a key common attribute of successful programs (Boult et al., 2009b). Reviews of existing care models have indicated that comprehensive assessments should include multiple dimensions such as medical diagnoses, physical functioning, social risk factors, and behavioral health concerns (Boult and Wieland, 2010; Hong et al., 2014b). The factors that determine who is most likely to benefit include both the conditions that cause them to need a high level of care (Brown et al., 2012) and the patient's amenability to complying with treatment protocols and change behaviors (Hibbard et al., 2016; Hibbard et al., 2015). With a more complete understanding of the full spectrum of needs of the patient, care providers can select a suitable care plan.

Another common attribute among successful models is that a dedicated care coordinator—usually a social worker or registered nurse—located in the physician's office coordinates care for patients. One important role for the care coordinator is to develop an ongoing working relationship with the patient, family members, and other informal caregivers, as well as with the physicians caring for that patient (Berry-Millett and Bodenheimer, 2009; Bodenheimer and Berry-Millett, 2009; Brown et al., 2012; Hong et al., 2014b). An analysis of program design in Medicare's demonstration projects on disease management, care coordination, and value-based payment found that the nature of interactions among care managers, patients, and physicians was the strongest predictor of success in reducing hospital use (Nelson, 2012). These interactions occurred in a variety of ways, such as meeting patients in the hospital or occasionally accompanying patients on visits to their physician.

Effective care communication, through coaching and education, can play an important role in engaging the patient and family in sharing decision making, actively managing care, and developing a care plan that best reflects a given patient's goals and desires—all common attributes of successful care models. When describing Minnesota's Health Care Home (HCH) program at the first workshop, Bonnie LaPlante, HCH interim director and capacity building and certification supervisor in the Health Policy Division at the Minnesota Department of Health, explained that care coordinators develop relationships with the patients while physicians identify their panel of patients and commit to helping each one understand that better care results from choosing a primary care provider.

Patient monitoring, strategic use of data to provide timely feedback to the care team, and facilitating transitions between inpatient and outpatient or nursing home care are other important attributes of successful programs. Transitional care interventions have been shown, for example, to reduce hospital readmissions by as much as one-third (Englander et al., 2014; Feltner et al., 2014; Kansagara et al., 2015).

On the whole, there is convergence in the literature around many common care attributes. The eight attributes highlighted in the framework (see Box 4–2) are based on McCarthy and colleagues' (2015) synthesis, as well as other pertinent literature.

### BOX 4–2

### *Care and Condition Attributes of Successful Care Models*

- **Assessment**. Multidimensional (medical, functional, and social) patient assessment
- **Targeting**. Targeting those most likely to benefit
- **Planning**. Evidence-based care planning
- **Alignment**. Care matched with patient goals and functional needs
- **Training**. Patient and care partner engagement, education, and coaching
- **Communication**. Coordination and communication among and between the patient and care team
- **Monitoring**. Proactive tracking of the health status and adherence to care plans
- **Continuity**. Seamless transitions across time and settings

SOURCES: (Anderson et al., 2015; Bodenheimer and Berry-Millett, 2009; Boult and Wieland, 2010; Brown et al., 2012; McCarthy et al., 2015; Nelson, 2012)

## DELIVERY FEATURES

The third dimension of the framework addresses delivery features. As with the evidence supporting common care attributes, there is substantial overlap in the indications supporting specific features. In the second workshop, for example, Brown highlighted two managed care plan models that show some evidence for improvement and that share many of the same features. The first model, Geisinger Health System's Patient-Centered Medical Home (ProvenHealth Navigator) (Maeng et al., 2015), embeds care managers with primary care providers to identify and work with the truly high-risk cases that are identified on a list the case managers receive. The care managers have links to physicians at other care sites and serve as the communication hub. The second model Brown discussed, the Comprehensive Care Physician model (Meltzer and Ruhnke, 2014), has eliminated hospitalists to improve the continuity of care for all of its high-risk patients and instead allocates these patients to specific physicians who have limits to their panel size to increase their interaction with their patients. This model uses interdisciplinary teams and data-driven meetings to improve care and care coordination. Both of these programs achieve meaningful shared savings.

Brown and colleagues' analysis of the Medicare Care Coordination Demonstration identified six practices of care coordinators that were common among the more successful programs for high-need individuals (Brown et al., 2012): Care coordinators had monthly face-to-face contact with patients; they built a strong rapport with physicians through face-to-face contact at the hospital or the office; and they acted as a communications hub for the many providers involved in the care of these patients and between the patient and those providers. In addition, the care coordinators used behavior-change techniques, not just patient education, to help patients adhere to medication and self-care plans; they also had reliable information about patients' prescriptions and access to pharmacists or medical directors. Finally, the care coordinators knew when patients were hospitalized and provided support for the transition home.

In his presentation at the second workshop, Rahul Rajkumar, deputy director at the Center for Medicare & Medicaid Innovation (CMMI), noted that after 5 years of studying various approaches for change, CMMI has developed an abstract understanding of some of the common delivery features of successful models. Among those features are using team-based approaches, providing enhanced access to providers, proactively using continuous data to improve care, working across the medical neighborhood with a very select group of medical subspecialists, engaging patients in shared decision making, and stratifying patients based on risk.

The common delivery features highlighted in the framework (see Box 4–3) represent these more granular activities that are required to realize the common attributes.

### BOX 4–3

*Delivery Features of Successful Care Models*

- **Teamwork**. Multidisciplinary care teams with a single, trained care coordinator as the communication hub and leader
- **Coordination**. Extensive outreach and interaction among patient, care coordinator, and care team, with an emphasis on face-to-face encounters among all parties and collocation of teams
- **Responsiveness**. Speedy provider responsiveness to patients and 24/7 availability
- **Feedback**. Timely clinician feedback and data for remote patient monitoring
- **Medication management**. Careful medication management and reconciliation, particularly in the home setting
- **Outreach**. The extension of care to the community and home
- **Integration**. Linkage to social services
- **Follow-up**. Prompt outpatient follow-up after hospital stays and the implementation of standard discharge protocols

SOURCES: (Anderson et al., 2015; Bodenheimer and Berry-Millett, 2009; Brown et al., 2012; Hasselman, 2013; McCarthy et al., 2015; Nelson, 2012; Rodriguez et al., 2014)

## ORGANIZATIONAL CULTURE

McCarthy and colleagues' (2015) synthesis of common attributes, in which they separate the feature content (i.e., the what) and the method (i.e., the how), inspired the fourth dimension of the framework: the incorporation of organizational culture.

A study of 18 successful complex care management programs for high-need, high-cost patients with multiple or complex conditions—often combined with behavioral health problems or socioeconomic challenges—recommended a number of operational approaches (Hong et al., 2014b). In particular, this study highlighted the success of programs that adapted and customized their approaches and teams to the local context and caseload. Success often involved structuring the size of the program to better facilitate communication and adapting the program as local circumstances changed or evolved (Anderson et al., 2015).

During the first workshop, LaPlante described an example of a clinic in Minnesota's HCH that might start with a care plan in which a registered nurse serves as the care coordinator, but over time the plan adapts to changing circumstances and adds a social worker or a community health worker as a care coordinator and involves other health care team members to contribute their talents to care coordination. She noted that some of the state's small, rural, solo-practice clinics do not have the resources to hire a care coordinator and have just started assessing their population and identifying what would be best for that population.

In addition, because care management programs are highly specialized, customized training for team members enhances success. This may involve offering specialized education and training for providers and team members (American Geriatrics Society Expert Panel on the Care of Older Adults with Multimorbidity, 2012; Hong et al., 2014b) or using care managers who have already received specialized training (Bodenheimer and Berry-Millett, 2009; McCarthy et al., 2015).

The Health Resilience Program (HRP) in Oregon, which was a 4-year-old program at the time of the first workshop, is a care program for high-need, high-cost patients that marries a nontraditional workforce with a safety net of primary care practices. The program's primary workforce, explained Rebecca Ramsay, director of community care at CareOregon, consists of master's degree–level community outreach specialists paired with culturally specific peer-support specialists and addiction recovery mentors to work intensively with CareOregon's highest-risk and highest-need patients. These specialists focus primarily on the social determinants of health, but they are embedded in practices and function as part of a primary care team. "We have hired skilled behaviorists and peers with community outreach capacity and excellent engagement skills who spend 60 to 70 percent of their time in the community going to shelters, hospitals, park benches, and single-room occupancy housing, the places where our clients are living their lives," said Ramsay during the first workshop. She continued, "They are trained in trauma-informed care, and they are learning evidence-based trauma-recovery interventions." Those interventions include seeking-safety methods (Najavits, 2001) and eye-movement desensitization and reprocessing (EMDR), both of which have proven effective in treating posttraumatic stress disorder (PTSD) and substance abuse. Behavioral health clinicians provide clinical supervision, with dotted-line supervision provided by a primary care champion.

Ramsay also discussed the strong operational relationships that have developed among HRP program staff, and McCarthy and colleagues' (2015) synthesis of care models cites effective interdisciplinary teamwork as of one of the execution methods of successful models. Boult and Wieland, however, noted that, for many primary doctors, the inability to effectively treat complex chronic patients was exacerbated by not having the proper training or experience to work in a team setting (Boult and Wieland, 2010). Molly Coye, social entrepreneur in residence at the Network for Excellence in Health Innovation, explained in the second workshop that some programs have seen substantial changes in workforce roles, highlighted by the inclusion of social workers, licensed professional counselors, behavioral health specialists, and pastoral professionals as principal members of the integrative care teams who serve to coordinate a broad range of behavioral health and social services, including help with housing and financing. Embedding case managers in the practice to facilitate access and build trusting relationships with both patients and primary care providers can help solidify complex networks (Hong et al., 2014b; Nelson, 2012).

The workforce is not the only adaptive feature of successful care models. Effective use of data access, sources, and application can vary considerably and have a significant impact on the construction and responsiveness of a program (Hong et al., 2014b; McCarthy et al., 2015). Data sources themselves range from qualitative in-person assessments to such sophisticated health information technologies as interoperative electronic health records and patient-generated outcomes data from wearables and trackers—all of which care programs could use to assess outcomes or attribute value. Health systems can also use metrics gathered by the care team to evaluate and improve care models and their performance (American Geriatrics Society Expert Panel on the Care of Older Adults with Multimorbidity, 2012; McCarthy et al., 2015).

As an example of how metrics can inform care, John O'Brien, vice president of public policy at CareFirst BlueCross BlueShield, explained how CareFirst gives providers access to a suite of data and analytic reports, called SearchLight, that uses clinical claims and other information to help them hot-spot across their population. If these analytic tools identify a patient who needs additional services, SearchLight provides a link to the iCentric service request hub for referrals or requests for additional services, such as a medication consult with a pharmacist. To help the providers use and make sense of the SearchLight data, CareFirst employs 22 program consultants. In addition, CareFirst uses 300 nurse care coordinators as the interface between the patient, the provider, the care plan, and the community at large. O'Brien said a care coordinator who senses something is missing from someone's care can request a consult from a registered nurse, who will go into the home to look for fall risks, gaps in care, lack of medication adherence, and lack of a caregiver. The information from that consult then feeds back to the care team.

Informed by these practices, and with grounding in recommendations from Hong et al., 2014, Anderson et al., 2015, and others, the six elements of organizational culture included in the framework reflect the strong convergence of common operational approaches to successful care models (see Box 4–4).

### BOX 4–4

*Organizational Culture of Successful Care Models*

- Leadership across levels
- Customization to context
- Strong team relationships, including patients and care partners
- Training appropriate to circumstances
- Continuous assessment with effective metrics
- Use of multiple sources of data

SOURCES: (Anderson et al., 2015; Hong et al., 2014; McCarthy et al., 2015)

## CARE MODELS THAT DELIVER AND THE PATIENT TAXONOMY

### *A Conceptual "Crosswalk" Exercise*

Examples of health care systems that use validated care models to successfully address the high-need and high-cost patients abound (see Appendix A for examples). Indeed, the lack of models is not a significant barrier for any delivery system that truly wants to improve care delivery for this population (Anderson et al., 2015; Boult et al., 2009; Brown et al., 2012; McCarthy et al., 2015). Specific characteristics of a given system's patient population will influence the requirements, as Brown discussed during the second workshop: a patient in the community is going to have different care delivery requirements than is a patient in an institution, while individuals with a fee-for-service Medicare plan may have different needs than are individuals who are in a managed care plan.

To demonstrate the utility of the starter taxonomy described in Chapter 3 for selecting appropriate care models, the committee performed the following conceptual mapping exercise on a sample of 14 successful care models that highlight many of the attributes, delivery features, and operational practices described in the framework Milstein proposed. Selected programs span the range of potential models, including interdisciplinary primary care (e.g., Guided Care, Centers for Medicare & Medicaid Services' Program of All-Inclusive Care for the Elderly [PACE]); care and case management (e.g., Integrated Care Management Program at Massachusetts General Hospital); transitional care (e.g., Naylor Transitional Care Model); and programs with strong integration of medical, social, and behavioral services (e.g., Improving Mood: Promoting Access to Collaborative

Treatment [IMPACT]). The sample programs were chosen in part due to the available evidence to support effectiveness across three domains: health and well-being, care utilization, and costs.[9]

Using the targeted populations described by the selected models, the committee determined which segment or segments proposed in the taxonomy would be served by that care model. The committee also determined whether the selected models were designed to specifically target individuals with complex behavioral or social factors.

An illustration of the resulting "crosswalk" is shown in Figure 4–2. This diagram shows that there are successful care models that apply to each of the

| SEGMENT<br>PROGRAM | Children w/ complex needs | Non-elderly disabled | Multiple chronic | Major complex chronic | Frail elderly | Advancing illness |
|---|---|---|---|---|---|---|
| Care Management Plus | | | | ■ * | | ■ * |
| Commonwealth Care Alliance | | ■ * | | | | |
| Complex Care Program at Children's National Health System | ■ | | | | | |
| GRACE | | | | ■ * | | |
| Guided Care | | | | ■ | | |
| Health Quality Partners | | | ■ | ■ | | |
| Health Services for Children with Special Needs | ■ * | | | | | |
| Hospital at Home | | | | | | ■ |
| H-PACT | | ■ * | | | | |
| IMPACT | | | ■ * | | ■ * | |
| Partners HealthCare Integrated Care Management Program | ■ | | | ■ | | |
| MIND at home | | | | | ■ * | |
| Naylor Transitional Care Model (Penn) | | | | | ■ | |
| PACE | | | | | ■ * | |

**FIGURE 4–2** | A sample of 14 care models which have evidence of success, matched to the six population segments identified in the taxonomy showing that each segment has been matched to at least one program. A subset of these care models also targets social and/or behavioral risk factors faced by high-need patients and is marked with an (*).

NOTE: Many of these programs could be matched and/or adapted to other patient segments.

SOURCE: Models of Care for High-Need Patients Planning Committee, National Academy of Medicine

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[9] An exception was made for pediatric-specific programs because of a dearth of evidence.

different segments defined by the taxonomy. Additionally, the diagram shows that there are areas of overlap, with some programs being applicable to multiple segments in the taxonomy and some segments being served by multiple programs. Even with this limited selection of care models, the range of available options enables targeting of individual care models to specific patient groups based on characteristics and needs. Consequently, this crosswalk demonstrates that, with a patient taxonomy and "menu" of evidence-based care models that incorporate many of the care attributes, delivery features, and operational practices identified in the framework laid out in this chapter, health systems would be better equipped to plan for and deliver targeted care based on patient characteristics, needs, and challenges.

This crosswalk was performed solely as a conceptual mapping exercise to illustrate how a patient taxonomy can inform care: it is not an exhaustive crosswalk of all evidence-based care models. The intent of this exercise was to demonstrate the practicality of matching specific care models (e.g., GRACE or Hospital at Home) to identified patient groups (major complex chronic with social risk and/or behavioral health factors or advancing illness, respectively) to guide practical translation of this knowledge. In addition, many models could be matched or adapted to multiple patient groups, which Figure 4–2 suggests but may not fully reflect. Similar to the taxonomy, this is one approach—a starting approach—and is intended only to be illustrative. Theoretically, such a mapping exercise could also identify programs that are needed to meet the needs of specific segments otherwise lacking in targeted care models.

### *An Example from the Crosswalk*

As a specific example of a well-served segment, Milstein highlighted two populations during his presentation at the second workshop: the frail elderly, and the frail elderly with social risk and/or behavioral health. He then discussed those programs that he and his colleagues identified as favorably impacting health and well-being, measures of utilization, or cost (net of the cost of the program itself). He noted that although a range of interventions improved the health and well-being and cost domains, much of the research used to evaluate the programs was completed before the field recognized the growing importance of patient experience. He expressed confidence, however, that "some of these programs would have also moved the needle on patient experience."

For the frail elderly population,[10] Milstein described two potential programs as appropriate matches. The two programs were the Transitional Care Model, developed by Naylor and colleagues at the University of Pennsylvania (Bradway et al., 2012; Hirschman et al., 2015; Naylor, 2000), and CMS's PACE (Boult and Wieland, 2010; Hirth et al., 2009; Lynch et al., 2008), which was developed to serve elderly in San Francisco's Chinatown-North Beach neighborhood (Ansak and Zawadski, 1983; Zawadski and Ansak, 1983). In reviewing the two programs, Milstein explained that the Transitional Care Model has a target population of hospitalized, high-risk older adults with chronic conditions. Key components of this intervention include multidisciplinary provider teams, led by advanced practice nurses that engage in comprehensive discharge planning; 3-month post-discharge follow-up that includes frequent home visits and telephone availability; and active involvement of patients and family members in identifying patient and family goals and building self-management skills. Research has demonstrated that this program is effective at reducing rehospitalizations and patient health care expenditures (Coalition for Evidence-Based Policy, 2017).

The target population for PACE includes adults age 55 and older who are publicly insured, have chronic conditions and functional and/or cognitive impairments, and live in the service area of a local PACE organization. Many PACE participants are dual-eligible individuals. Each PACE site provides comprehensive preventive, primary, acute, and long-term care and social services, including adult day care, meals, and transportation. An interdisciplinary team of health professionals provides PACE participants with coordinated care that for most participants enables them to remain in the community rather than receive care in a nursing home. Patients receive all covered Medicare and Medicaid services through the local PACE organization and at a local PACE center, thereby enhancing care coordination. Clinical staff are employed or contracted by the local PACE organization, which is paid on a per-capita basis and not based on volume of services provided.

Several research groups have evaluated PACE programs around the country (Boult et al., 2009b; Eleazer, 2000; Gross et al., 2004; Hirth et al., 2009; Lynch et al., 2008; Meret-Hanke, 2011; Pacala et al., 2000; Weaver et al., 2008). These evaluations have found that participants in PACE programs are hospitalized less frequently but make more frequent use of nursing homes; Milstein noted, however, there is also evidence that PACE programs may be more effective than

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[10] Frail elderly is defined as over 65 and with two or more frailty indicators, as defined in (Joynt et al., 2016) (gait abnormality, malnutrition, failure to thrive, cachexia, debility, difficulty walking, history of fall, muscle wasting, muscle weakness, decubitus ulcer, senility, or durable medical equipment use). For more information, see Chapter 3.

home- and community-based waiver programs in reducing long-term nursing home use, especially for those individuals with cognitive impairments. PACE program enrollees have lower mortality rates and experience better quality care on some measures, such as pain management. The program appears to be cost neutral to Medicare and may have increased costs for Medicaid, though Milstein said more research is needed on this facet of the program.

Another subcategory, frail elderly with social risk and/or behavioral health problems,[11] benefited from a different set of programs, including the IMPACT program developed at the University of Washington (Callahan et al., 2005; Lin et al., 2003; Unutzer et al., 2002; Unutzer et al., 2008; Van Leeuwen Williams et al., 2009), and the Maximizing Independence at Home (MIND at Home) program developed at Johns Hopkins University (Black et al., 2013; Johnston et al., 2011). The IMPACT program targets older adults with depression and includes collaborative care and a care manager. Each individual's primary care physician works with a consulting psychiatrist and a depression care manager—who can be a nurse, social worker, or psychologist supported by a medical assistant or some other paraprofessional—to develop and implement a treatment plan, including antidepressant medication and/or short-term counseling. The care manager also educates the patient about depression and coaches the patient on self-care techniques. Providers use ongoing measurement and track outcomes validated through use of a depression screening tool, such as the Patient Health Questionnaire-9, and adapt care to changing symptoms. Once a patient improves, the care manager and patient jointly develop a plan to prevent relapse.

A randomized, controlled trial of 1,801 adults over age 60 with depression or dysthmic disorder or both revealed that half of patients had a greater than 50 percent reduction in depressive symptoms compared to 19 percent of patients in the control group (Unutzer et al., 2002). Net of intervention costs, the total cost of health care was $3,363 less per patient than for patients in the control group (Unutzer et al., 2008).

The MIND at Home program targets elderly patients with memory disorders. It is a home-based program that links individuals with dementia and their caregivers to community-based agencies, medical and mental health care providers, and community resources. An interdisciplinary team, comprising trained nonclinical community workers and mental health clinicians, delivers individualized care planning, implementation, and monitoring for both patient and caregiver based on comprehensive in-home dementia-related needs assessments the clinicians

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[11] High-impact social risk variables are low socioeconomic status, social isolation, community deprivation, and housing insecurity. High-impact behavioral health variables are substance abuse, serious mental illness, cognitive decline, and chronic toxic stress. For more information, see Chapter 3.

conduct. In addition to ongoing monitoring, assessment, and planning for emergent needs, the team uses six basic care strategies: resource referrals, attention to environmental safety, dementia care education, behavior management skills training, informal counseling, and problem solving. Each component of the intervention is based on best practice recommendations and evidence from prior research, and the components are combined for maximum impact. The team also provides education, skills training, and self-management support for patients and families.

An 18-month trial of MIND at Home, involving 303 people age 70 and older with memory disorders—primarily dementia—and mild cognitive impairment, found that those individuals in the MIND at Home program were able to stay in their homes an average of 288 extra days over the subsequent 2 years compared to individuals who received no special care. Participants who met regularly with care coordinators were less likely to leave their homes or die than were those in the control group, and they had fewer unmet care needs, particularly with regard to safety and legal and advance care issues (Samus et al., 2014). The researchers reported that the caregivers of individuals in the MIND at Home program also seemed to benefit in terms of reducing the amount of time they needed to spend with the individuals in their care (Tanner et al., 2015).

While these care models share many of the care attributes, delivery features, and organizational characteristics outlined in the framework presented in this chapter and include a variety of different service settings, in order to be successful, they need to be tailored to the health system, the community, and the unique patient characteristics that drive health care need. For example, in the case of the frail elderly segment, the characteristics that drive the need for health care relate to the frailty indicators that must be managed by interdisciplinary teams, often with social supports including family members and community social services, where available. When these individuals also have mental health issues, specialized coordination with appropriate mental health care providers becomes important.

## DENVER HEALTH: A "REAL-WORLD" APPLICATION

Denver Health represents one example that pulls together the use of whole population risk stratification, the practical use of a patient taxonomy, targeted care, and many of the care attribute and delivery features of successful care models. Simon Hambidge, chief ambulatory officer at Denver Health and professor of pediatrics at the University of Colorado, spoke about the program at the second workshop. Referring to Denver Health as "unusual," Hambidge explained that it combines a safety net hospital, a large federally qualified health center (FQHC), a public health department, an emergency 9-1-1 call center, and several school-based health centers. Though the work he discussed in his presentation took place in Denver Health's FQHC, it impacted the rest of the organization. The goal of this CMMI-funded project was to improve the experience of care, improve the health of populations, and reduce per capita costs of health care. To meet that goal, however, a fourth goal should be added: improving provider engagement and creating healthier and happier providers. Some $9 million of the $19.8 million CMMI award was spent on redesigning health teams; another $9 million was spent on health information technology to enable population segmentation and patient risk stratification; and the remaining funds were spent on rapid-cycle evaluation to enable design iteration.

### *Patient Risk Stratification*

Denver Health's risk stratification approach uses clinical risk groups (CRGs), a clinically based classification system originally developed by 3M to measure a population's burden of illness (Hughes et al., 2004). This approach uses input from clinicians and data analysts to assign every CRG-classified patient to one of four tiers of increasing complexity and risk (see Figure 4–3), with additional criteria used to override a CRG designation.[12] As an example, Hambidge explained that a child on Denver Health's special health needs registry or individuals with certain mental health diagnoses would receive increased care coordination regardless of what their CRGs would normally warrant. Similarly, a family history of premature birth would result in a pregnant woman being targeted for more intensive interventions no matter where she fell on the CRG stratification scale. He also noted that different stratification algorithms are used for adults and children.

### *Matching Care Delivery to Tier Level*

For healthy adults (i.e., those assigned to Tier 1), standard panel management techniques, including a heavy reliance on Denver Health's eTouch text messaging program, have produced good clinical outcomes, Hambidge said. These outcomes include decreased no-show rates, higher immunization rates, and higher well-child appointment rates. Individuals in Tier 2 start to get increased care management for chronic diseases. For children, Tier 2 care management involves lay patient navigators, some nurse care coordination, and some home visits and environmental scans for children with asthma. For adults, Tier 2 care

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[12] NOTE: This risk stratification does not directly map on to the taxonomy described in Chapter 3. However, it is an example of a system that could be used to assist in care delivery.

includes more pharmacotherapy management and emphasizes transitions of care to reduce readmissions.

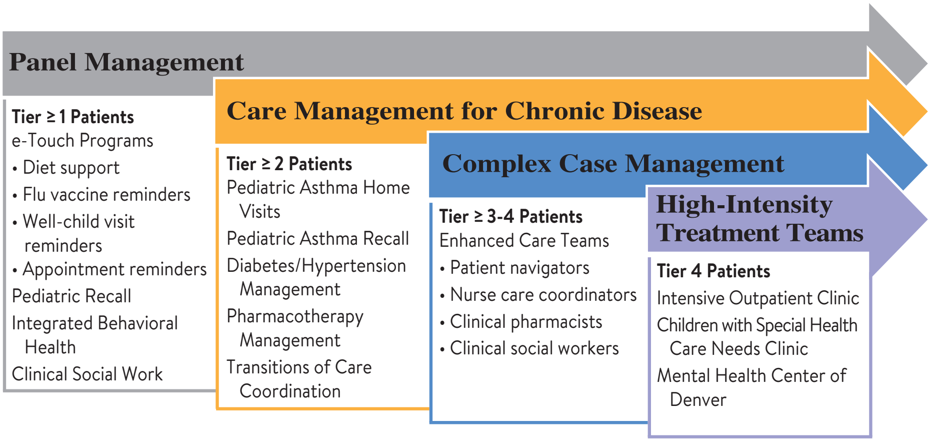

**FIGURE 4–3** | Denver Health's use of Clinical Risk Groups to assign patients to care programs.

NOTE: This is an example of risk stratification. It does not map directly on to the taxonomy proposed in Chapter 3.

SOURCE: Hambidge presentation, January 19, 2016.

Complex case management strategies using enhanced care teams come into play for Tier 3 and Tier 4 patients. Integrated behavioral health assessments and care are standard for patients in these two tiers, as is the involvement of nurse care coordinators, clinical pharmacists, and clinical social workers. For Tier 4 patients, which Hambidge said is where the biggest cost savings and clinical benefits are realized, Denver Health relies on specialized intensive outpatient clinics for adults and multidisciplinary special needs clinics, similar to those prevalent in children's hospitals, for its highest-risk pediatric patients. The intensive outpatient clinic is targeted to adults with multiple, potentially avoidable, inpatient admissions within 1 year, and it serves as the patient's medical home. Panel sizes in this clinic are smaller, and the care teams include a dedicated social worker and navigator. This clinic also works closely with the Mental Health Center of Denver.

### *Outcomes*

Hambidge said the total number of "super-utilizers" is stable, but individual turnover is high, which creates a dynamic population (Johnson et al., 2015b). A population- and individual-level analysis of Denver Health's data showed that over a 2-year period only a small number of superutilizers continuously met the criteria to be considered a superutilizer, and a slightly larger number went back and forth between meeting and not meeting those criteria. This analysis, he said, shows the importance of developing a population-based stratification system even though individuals are getting care. "You have to step back and look across the population to see who is coming into and going out of your system."

These data also show the importance of taking a population-based, actuarial approach when conducting financial analyses. As Hambidge explained, the natural tendency for high-utilizing patients to become less so over time would lead to an overestimation of cost savings based on individual results. Denver Health's data at the individual patient level, for example, showed that charges were reduced by 44 percent and admissions fell by 53 percent without any clinical intervention simply because of this natural tendency for individuals to move out of the high-utilization group. When the financial analysis was conducted using population-based cost avoidance as the metric, however, the true savings were approximately 2 percent, or $6.7 million, over a 1-year period, which Hambidge characterized as significant and important. "Even though programs such as this have significant clinical impact and significant impact on family and provider satisfaction, they are going to be sustainable based on financial performance." Most of the savings, he added, came from Denver Health's adult population, but some 15 to 20 percent of the savings were realized from its Tier 4 pediatric population.

The demonstrated success of models of care such as those being implemented by Denver Health and other forward-thinking health systems to improve the care of high-need patients and perhaps reduce the cost of care raises an obvious question: why are more health systems not adopting these models of care? Chapter 5 discusses some of the barriers to the wider spread and scale of successful models of care and raises some possible policy solutions to address those barriers.

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# 5

# POLICY TO SUPPORT THE SPREAD AND SCALE OF CARE MODELS

*Fictional patient vignette: Andy is a 75-year-old man whose arthritis, anxiety, and heart disease make it difficult for him to be on his feet and out of the house for long periods of time. He has frequent doctor appointments, and he feels lucky that between his Medicare and Medicaid benefits, most of his costs—for his general practitioner, pain management specialist, psychiatrist, and cardiologist—are covered. Often, the most difficult part of his health care routine is trying to figure out what is covered under Medicare and Medicaid, and by whom. Even though the staff at his various doctors' offices are willing to help him, Andy still spends hours trying to figure out what he is eligible for, and whether Medicare or Medicaid or both will pay for it. Andy doesn't understand why his Medicare and Medicaid coverage are so separate. They're both part of the federal government, aren't they?*

While a range of programs have been shown to improve care for high-need patients, a variety of barriers have prevented successful programs from expanding beyond a single site or led them to be discontinued after an initial trial. These barriers are complex and span a range of factors: health system fragmentation, high implementation start-up costs with uncertain returns on investment; the challenge of integrating (and paying for) social and other nonmedical services with medical care; the difficulty of replicating care models developed in one setting across disparate settings; workforce training issues; and the need for appropriate quality measures and a data infrastructure to inform those measures. A number of barriers, however, have actionable solutions, with the key foundational issue often being federal-, state-, and health-system-level policies that exacerbate the challenges of caring for high-need patients. This chapter explores areas in which policy initiatives could accelerate the spread and scale of care models for high-need patients—particularly the programmatic integration of social supports and medical care—through developing a workforce to deliver comprehensive health care, expanding and realigning payment policies, reexamining quality measurement, and improving the data infrastructure.

Although the committee recognizes that prevention of the chronic conditions associated with high-need patients—through both public health and medical interventions—is a critical pursuit, this publication does not address policies that focus on population health and prevention. Many elements central to population health strategies (e.g., integration of social services and medical care) are relevant to the issues in this publication, however, and considering steps to increase prevention efforts could perhaps be the focus for future work by those concerned with improving the lives of high-need patients.

## SPREADING AND SCALING SUCCESSFUL CARE MODELS

In his presentation at the second workshop, Arnold Milstein from the Clinical Excellence Research Center at Stanford University noted that an important barrier to spreading and scaling care models is the complexity of health care delivery systems. In Milstein's experience, system leaders are interested in adopting a new care model if the model would affect only one area of operations, such as primary care or neurology. Any idea for lowering the cost of providing better care that required cooperation among and across multiple departments, however, was typically rejected by system executives. "We are still in a situation where systems are challenged by the complexity of the job they face simply in delivering care, let alone improving it," he said. He also noted the challenge and cost of adapting a model developed to serve one particular subpopulation of high-need patients in one specific setting to another subpopulation in a different health care setting.

One approach Milstein suggested to dealing with these challenges would be to create a network of improvement communities that would bring together parties interested in scaling models of care to chart what does and does not work for various settings. Creating a network of improvement communities could accelerate the transfer of insights about better care methods and scaling approaches, and he credited organizations such as the Institute for Healthcare Improvement for starting to engage in these types of learning activities. Milstein also suggested that spreading and scaling efforts might benefit from a research effort to apply simulation modeling, using continuously generated patient data, to identify actions to improve care and lower cost. The resulting simulation models would then be available as a national asset.

Though the challenges to spreading and scaling models of care are significant, research has identified helpful tactics for spread and scale. During the first workshop, Deborah Peikes from Mathematica Policy Research discussed some of the factors for successful scaling that she and her colleagues found in studies conducted for the Centers for Medicare & Medicaid Services (CMS). The identified success factors included substantial financial incentives; support from multiple payers, such as coordination and aligning spending, technical assistance, data feedback, staff support, and reporting requirements; adapting data and technical assistance to reflect the considerable diversity of practices, health systems, markets, and patients; and monitoring or auditing, particularly if the funder bears risk, to ensure that programs are implemented as intended (Dale et al., 2016; Taylor et al., 2015a).

Despite Milstein's observation that health system leaders are reluctant to adopt models that require widespread changes in a health system, Peikes and colleagues found that practices that spread a model broadly throughout the practice were the most successful at implementing the model. Strong and consistent leadership is also critical for successful model adoption, and technical assistance on leadership and teamwork may help spread interventions. She noted that implementing a care model piecemeal in an organization puts too much burden on clinician champions, leads to unclear roles and responsibilities, and does not encourage the development of a learning health system.

At the first workshop Lisa Mangiante from the Pacific Business Group on Health (PBGH) discussed lessons learned from efforts to spread the Intensive Outpatient Care Program (IOCP) model that Milstein and Alan Glaseroff developed for high-need patients in California's Health Homes program. Between May 2012 and July 2015, this high-touch, care-coordinated, patient-involved, and team-based care model (see Appendix A) has been spread to 23 delivery system partners in Arizona, California, Idaho, Nevada, and Washington, and it encompasses some 500 practices and 15,000 patients. Of the 23 health system partners who participated in this CMS-funded scaling project, 20 are sustaining this model in their operations by integrating the model into their overall population health strategies. Mangiante explained that there is a great deal of payment and organizational variation among the partners, including the Medicare Shared Savings Program, Pioneer accountable care organizations (ACOs), Medicare Advantage Plans, and fee-for-service operations. Partners included independent practice associations, medical foundations, and both integrated and nonintegrated systems.

When discussing what was involved in scaling the IOCP model, Mangiante said PBGH started with what it called the A List of medical groups in California: those that already had track records of innovation, did well with innovation, had an infrastructure in place to implement this model, and had supportive leadership. Those A List groups had IOCP operational within 10 months. Once Mangiante and her colleagues had successful experiences working with the A List groups, they added less aligned and less sophisticated providers who required ongoing support.

Mangiante noted the following key characteristics that enable this model to scale and launch successfully at new sites, many of which overlap with the framework of attributes for successful care models described in Chapter 4: provider-hospital integration and integration into a larger population health strategy; adapting to the local environment after meeting core requirements; a strong analytical capability enabling aggressive patient monitoring with regular feedback; hiring effective care coordinators; identifying physicians and nurses who welcome disruptive innovation; training staff in didactic, interactive, and peer-to-peer learning; giving physicians a role in patient selection; developing intensive local patient outreach with close contact between physician and patient; ensuring strong support from senior leadership; having dedicated physician champions; and targeting those most likely to benefit from this program. With regard to sustaining the model once it is operational, she said it is critical for the programs to involve multiple payers as a means of creating a solid revenue stream.

Given these types of lessons, an important consideration for spreading and scaling successful models of care for high-need patients could be having payers and health systems work both separately and in tandem to more aggressively implement these models. Gerard Anderson from Johns Hopkins Bloomberg School of Public Health reported at the third workshop that payers could help foster success by tying payments to improving the patient experience, improving the health of populations, and reducing per capita cost of care; they could also target resources to populations most likely to benefit from these models as well as in a manner consistent with best practice. Health systems, meanwhile, could work with peers to identify promising models and work with payers to develop alternative contracts that pay for services not covered by fee-for-service arrangements (see page 86 for more on payment policies). Health systems could also commit to adequate investments in training, practice redesign, and information technologies. Working together, payers and health systems could explore the use of the patient taxonomy as a tool to match patient groups to tailored care models that better meet individual characteristics, needs, and challenges.

Anderson also pointed to the need for more research on developing programs that can be adopted widely in a variety of settings. To help inform efforts to spread and scale effective models of care, he suggested more research in areas such as identifying people at high need in actual practice settings, identifying individuals who are likely to be high-need patients in the future, identifying the best methods of care coordination, developing cost-effective implementation practices, and developing methods for effectively integrating medical and social services. As he noted, the importance of integrating social services and medical care is embedded in the other four policy areas—workforce development, payment policy, quality measures, and data infrastructure.

## INTEGRATION OF SOCIAL SUPPORTS AND MEDICAL CARE

A recent analysis by McCarthy and colleagues found that comprehensive transitional care and case management involving patients and their caregivers after hospitalization is an important integrative feature of successful care models for high-need patients (McCarthy et al., 2015). As part of an effort to provide a framework for understanding the nature and extent of integration in programs that integrate long-term services and supports (LTSS) with medical care and behavioral health, the Long-Term Quality Alliance concluded that a critical element of a fully integrated model includes having a plan for health systems to accept responsibility for integrating medical care, postacute care, behavioral health care, pharmaceutical care, transitional care, and LTSS, including transportation and housing (Long-Term Quality Alliance, 2016).

As noted in Chapter 2, functional limitations are an important contributor to the disproportionate share of health care spending in the United States associated with high-need patients. In his presentation at the first workshop, Bruce Chernof from The SCAN Foundation noted that addressing a person's medical needs without also addressing functional limitations will have little impact on the cost or quality of care for these high-need patients. He also pointed out that social determinants of health,[13] which have been largely considered beyond the purview of the medical system, can have the biggest effect on ameliorating functional limitations. This is why successful models for improving care for high-need patients, such as those described in Chapter 4, often include the integration and delivery of social services in addition to better coordinated medical care. Enacting policies to facilitate the integration of social services and medical care is crucial for obtaining better outcomes for high-need individuals.

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[13] The Department of Health and Human Services' Office of Disease Prevention and Health Promotion defines social determinants of health to be social, economic, and physical conditions of an individual's life and surrounding environment, such as income, house, and nutritional factors, that impact the health outcomes of individuals (Secretary's Advisory Committee on Health Promotion and Disease Prevention Objectives for 2020, 2010).

A report prepared by Taylor and colleagues for Blue Cross Blue Shield of Massachusetts Foundation (Taylor et al., 2015b) points to the extensive scientific literature showing that nonmedical factors can play a substantially larger role than medical factors in health and health outcomes. On page 3, the report states there is "strong evidence that increased investment in selected social services as well as various models of partnership between health care and social services can confer substantial health benefits and reduce health care costs for targeted populations." Hayes and colleagues at the Bipartisan Policy Center (BPC) recently made a similar observation with regard to high-need Medicare patients and dual-eligible patients who receive care from both Medicare and Medicaid programs (Hayes et al., 2016). As an example, Hayes and colleagues (2016) noted that a recent evaluation of the Minnesota Senior Health Options program, which coordinates care for dual-eligible patients, found that this program increased the use of home- and community-based LTSS while decreasing hospitalizations for treatment of chronic illnesses and days spent in nursing homes (Anderson et al., 2016).

Two studies from Bradley and colleagues at the Yale School of Public Health further emphasize the importance of providing social services to improve health outcomes. The first study compared national spending on health services and social services among Organisation for Economic Co-operation and Development (OECD) countries and found that a larger ratio of social expenditures to health expenditures was significantly associated with better health outcomes (Bradley et al., 2011). OECD data used in this study (OECD, 2009) show that, compared to the United States, most highly developed countries spend a greater percentage of gross domestic product on social support and a smaller percentage on health care. In the second study, a state-to-state comparison of spending on social services and health care between 2000 and 2009 found that states with higher ratios of social service spending to health care spending[14] had better health outcomes and fewer days with functional limitations (Bradley et al., 2016). This team's analysis of 74 studies examining the impact of various health outcomes and health care costs found that three types of services were particularly important: supportive housing, nutritional support such as in-home meals for older adults, and case management and outreach programs.

While these and other studies reveal the important role social supports play in achieving the best health outcomes for high-need patients, it can be difficult to integrate social service and medical care programs into a seamless system, often because there are separate funding streams that hinder integration. For

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[14] This ratio was calculated as the sum of social service spending and public health spending divided by the sum of Medicare spending and Medicaid spending.

example, for the 10.3 million dual-eligible beneficiaries—many of whom are also high-need patients—Medicare is the primary payer for acute and postacute care services, while Medicaid covers services not included in Medicare benefits, such as case management services, transportation to medical appointments, personal-care services to help patients with functional limitations, and other LTSS. Too often, according to the work from Hayes and colleagues (2016), the separation of Medicare and Medicaid benefits and the "carving out" of certain Medicaid benefits from managed care contracts can lead to a fragmented care model in which the beneficiaries and their family caregivers must navigate multiple plans or payers depending on the type of service provided (Hayes et al., 2016a).

While this chapter addresses the negative effect that current payment policies have on integration in more detail below, one step the federal government, states, and payers could consider taking would be to revise financial incentives and organizational systems in a manner that recognizes the importance of providing social supports in conjunction with medical care. Currently, said Anderson, health systems and payers invest money for social services primarily when doing so saves money for the medical care system, even though providing social services for high-need patients has importance aside from cost savings. Moreover, savings accrued from social service investment are often not reinvested in social services, missing an opportunity to provide even better care. One caution to exercise when integrating social services and medical care is to not "medicalize" social services by making them the responsibility of health care systems. Doing so would create the risk that all services aimed at improving outcomes for high-need patients become "health care" and therefore subject to the administrative and payment rules that govern health systems.

While there are many system constraints to integration, there are opportunities nonetheless to better link medical and social services. For example, the Office of the Assistant Secretary for Planning and Evaluation could take the lead in overseeing integration efforts, perhaps in conjunction with an interagency task force involving the Departments of Agriculture, Health and Human Services, Transportation, and Urban Development that would work to embed health in all policies.[15] The federal government will likely need to engage in a strategy coordinated with state leadership to incentivize provision of evidence-based social support services in conjunction with the delivery of medical services. In addition, the nation would be well-served if the federal government studied the

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[15] Health in all policies is a strategy for addressing the complex factors that influence health and equity, including educational attainment, housing, transportation options, and neighborhood safety. Additional information is available at: http://www.naccho.org/uploads/downloadable-resources/Programs/Community-Health/HiAP-FAQ-Final-12-04-24.pdf.

impact of providing social services on health outcomes for high-need patients and encouraged states to support integration of social support services through "no wrong door" approaches that link patients to needed services regardless of how or where they enter health care or social services systems.

State governments, which control Medicaid spending, can also play a role in fostering the integration of health and social services. McGinnis and colleagues at The Commonwealth Fund developed a policy framework to help states move beyond isolated pilot efforts and establish the infrastructure necessary to support ongoing integration of health and social services, particularly for Medicaid beneficiaries (McGinnis et al., 2014). Their framework focuses on creating a statewide integrator to assume responsibility for ensuring coordination and communication across state-level services, establishing a robust set of tools to measure health outcomes and costs and share data among health systems, and developing long-term financing sources and payment models with incentives to encourage ongoing integration.

## EXPAND AND ALIGN PAYMENT POLICIES

As multiple speakers at the first two workshops noted, payment policies that misalign financial incentives—particularly those that reimburse providers on a fee-for-service basis and that fail to pay for social services benefiting high-need patients—are perhaps the most prominent barrier to the widespread adoption of successful models of care for high-need patients. Many workshop participants stated the need for new payment policies that incentivize integration of social services and medical care and improved outcomes for high-need patients: Melissa Abrams from The Commonwealth Fund; Alan Glaseroff from Stanford Coordinated Care and Stanford School of Medicine; Bruce Chernof from The SCAN Foundation; Lisa Iezzoni from Harvard Medical School and the Mongan Institute for Health Policy at Massachusetts General Hospital; Robert Master from Commonwealth Care Alliance; John O'Brien from CareFirst Blue Cross Blue Shield; Peter Long from the Blue Shield of California Foundation; and Rahul Rajkumar from the Center for Medicare & Medicaid Innovation. A research synthesis compiled by The Commonwealth Fund also concluded that a lack of reimbursement under fee-for-service payment policies for providing care coordination and social supports is a major obstacle to spreading and scaling patient-focused care models for high-need patients (McCarthy et al., 2015).

Significant improvements have been made in paying for care coordination, and there is an increasing recognition that social supports are important components of effective care plans for high-need patients. Many insurers, including states and the federal government, are starting to embrace value-based purchasing that includes paying for care delivered outside of the traditional medical silo (Bachrach et al., 2014; Hamblin et al., 2011). In a recent perspective on the urgency of caring for high-need, high-cost patients, Blumenthal and colleagues point out, for example, that the Affordable Care Act catalyzed the formation of 838 ACOs covering more than 28 million people (Blumenthal et al., 2016b). At least some of these ACOs have allocated independent resources—not reimbursed by Medicare—toward providing short-term housing upon hospital discharge as a means of reducing hospital readmissions for vulnerable patients and keeping Medicare per-member spending below predetermined spending benchmarks (Viveiros, 2015). They also note that under the Medicare Access and Children's Health Insurance Program Reauthorization Act (MACRA), physicians will face strong incentives to participate in alternative, value-based payment models.

Fee-for-service Medicare Advantage Plans now pay for care coordination, and Medicare managed care plans have recognized the importance of care coordinators for high-need patients. In addition, CMS has granted an increasing number of Medicaid demonstration waivers for states that want to provide greater flexibility in covering community-based services as a means of reducing health care costs. Anderson noted that state and local public agencies are developing programs and task forces to support integration of social service and medical care programs. Examples include housing-related interventions such as the National Governors Association's Housing as Health Care program[16] and state-led Balancing Incentives Program and no wrong door approaches to provide access to LTSS for all populations and payers.[17]

The analysis conducted by Hayes and colleagues at the BPC and the recommendations they developed were intended to accelerate delivery system reform (Hayes et al., 2016a). Their analysis focused on the 10.3 million dual-eligible patients. Though only 20 percent of Medicare beneficiaries and 14 percent of Medicaid beneficiaries are dual-eligible individuals, they account for 35 percent of Medicare spending and 33 percent of combined federal and state spending on Medicaid. According to BPC's analysis, some 87 percent of dual-eligible beneficiaries have multiple chronic conditions, 54 percent have at least one behavioral health condition or cognitive impairment, and 29 percent have two or more limitations affecting activities of daily living. BPC's team noted that provider organizations seeking to improve care integration for high-need patients

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[16] For more information, see https://www.nga.org/cms/home/nga-center-for-best-practices/center-publications/page-health-publications/col2-content/main-content-list/housing-as-health-care-road-map.html (accessed on July 31, 2017).

[17] For more information, see http://www.balancingincentiveprogram.org (accessed on July 31, 2017).

frequently run into the complex maze of federal and state reimbursement rules that preclude payment for, and in some cases coverage of, services that health providers believe could avert costlier emergency or hospital inpatient visits, which are major driving forces for the high costs associated with high-need patients.

To best appreciate the challenges arising from dual-eligible status, it is necessary to understand how dual-eligible patients receive their benefits from these two distinct programs. Although both Medicare and Medicaid are authorized under the Social Security Act, the federal government administers Medicare, while federal and state governments jointly finance Medicaid. States cover certain mandatory benefits under Medicaid, while other services are optional and coverage is determined on a state-by-state basis. As Hayes explained in her presentation at the third workshop, Medicaid covers LTSS, including many services that deal with functional limitations. As of June 2015, only some 20 percent of dual-eligible individuals were enrolled in the type of organized systems of care that blend social services and medical care, such as Medicare managed care plans, Program of All-Inclusive Care for the Elderly (PACE), and Dual Eligible Special Needs Plans (D-SNPs).

In their report, Hayes and colleagues (2016) state that the specific care delivery model and state implementation of the model will likely determine whether full integration of Medicare and Medicaid services will improve quality and lower the total cost of care for dual-eligible beneficiaries. There is mounting evidence, however, that integration does improve quality and value. As noted earlier in this chapter, for example, dual-eligible patients enrolled in Minnesota's Senior Health Options program had fewer hospitalizations and emergency department visits and increased use of home- and community-based LTSS compared to individuals receiving benefits through Medicare fee-for-service plans (Anderson et al., 2016).

BPC's team pointed out that there is much to learn about integrating care for dual-eligible beneficiaries. Hayes and colleagues (2016) explained that only a relatively small number of states have more than a few years of experience fully integrating Medicare and Medicaid services for dual-eligible beneficiaries over age 65. Even fewer states have experience with the under-65 population, which has higher-than-average rates of untreated behavioral health issues and/or prevalence of homelessness according to Medicare managed care sponsors. Summarizing BPC's recommendations, Hayes explained that they include changing existing reimbursement structures, consolidating regulatory authority for dual-eligible programs within the Medicare-Medicaid Coordination Office at CMS, and building on lessons learned through implementation of existing programs and demonstrations to develop a consolidated framework for programs serving dual-eligible beneficiaries. Critical to that framework is the ability to combine Medicare and Medicaid financing streams into an integrated benefit structure that allows flexibility in benefit design to address patient needs. See Box 5–1 for selected excerpts of BPC's recommendations.

While BPC's recommendations aim to harmonize Medicare and Medicaid benefits to improve care of dual-eligible individuals, other efforts are under way to take advantage of Medicare and Medicaid programs that enable providers, payers, and state agencies with opportunities to test delivery system innovations that improve outcomes and patient experiences while increasing the value of care. Health Homes, Patient-Centered Medical Homes, Community Health Teams, and Transition Care Models are among the many programs using value-based strategies to replace traditional fee-for-service payment models. Recently, the Center for Health Care Strategies outlined approaches to value-based payments (Houston, 2016), some of which supplement fee-for-service payments, and others that replace them. Foundational payments, for example, are a flat or per-member per-month (PMPM) fee to reimburse providers for upfront investments they make to better coordinate care. Meaningful-use payments from the Office of the National Coordinator for Health Information Technology, which aim to reimburse practices for installing electronic health record systems, are an example of a foundational payment. Pay-for-performance models supplement fee-for-service payments by rewarding providers with performance incentive payments linked to outcomes and patient satisfaction metrics. The Medicare Physician Group Practice Demonstration is an example of this type of value-based payment model. Other approaches include bundled payments for a set of services for a specific care intervention, a common mechanism that state Medicaid programs use; shared savings programs that manage the total cost of care based on risk, such as the Medicare Shared Savings Program and state Medicaid ACOs; and capitation and global payments that pay a single PMPM fee to a provider to cover all of an individual's care, a model used by Oregon's Coordinated Care Organizations.

These types of payment methodologies can incentivize care investments in evidence-based best practices for high-need individuals and reduce the incentives that lead to ineffective and uncoordinated care. To increase their effectiveness, however, such payment models could be constructed to account for the increased financial risk associated with caring for high-need patients (Barnett et al., 2015). Health systems that focus exclusively on high-need patients can be at a market disadvantage and may be financially unstable.

They may be further disadvantaged by value-based purchasing arrangements that do not recognize the unique requirements of the high-need population. It may also be the case that capital markets would be less likely to finance organizations to better serve high-need patients because of the potential for competitive

## BOX 5–1

### *Selected Excerpts from the Bipartisan Policy Center's Recommendations to Align Programs and Integrate Care for Dual-Eligible Beneficiaries*

**Special-Needs Plans (SNPs)**: Permanently authorize Medicare Advantage Dual-Eligible SNPs. However, all plans fully integrate clinical health services, behavioral health, and LTSS by January 1, 2020. [Additionally], the combined Medicare and Medicaid benefits offered through all SNPs [should be] seamless to the beneficiary and to providers.

**Streamlining and aligning of SNPs**: For ongoing demonstrations, CMS should revise contracts to ensure that rates reflect unanticipated costs of infrastructure investment or significant differences in cost associated with serving certain special-needs populations, such as those with previously untreated mental illnesses or homeless individuals. [CMS should also] work with states to develop unique state-specific quality and access measures, and permit states to share in a greater percentage of [applicable] savings or permit added flexibility in the scope of covered benefits [as appropriate]. [Moreover,] CMS should establish additional demonstrations to integrate Medicare and Medicaid for dual-eligible beneficiaries based on findings from the evaluations of the first-round demonstrations.

**Expanded PACE eligibility**: CMS should test [variations of the Program of All-Inclusive Care for the Elderly (PACE) including] an expansion to individuals, regardless of age, who meet all other PACE criteria and who do not require a nursing home level of care; an option that permits individuals to enroll in PACE, but opt out of adult day services; and an option that includes both Medicare-covered services and a beneficiary "buy-in" of a limited LTSS benefit.

**Streamlined dual-eligible beneficiary services**: Regulatory authority for reimbursement structures serving dual-eligible beneficiaries should be consolidated into a single office or center within CMS, such as the Medicare-Medicaid Coordination Office.

**CMS, states, plans alignment**: Policymakers should build on lessons learned from existing programs and demonstrations to develop a contractual model similar to the innovative "three-way" contract between CMS, states, and plans under the financial alignment demonstration. A new model three-way contract should be uniform with respect to basic structure, beneficiary protections, quality requirements, care coordination, and continuity of care requirements. At the same time, it should be flexible enough to permit variation in delivery, provider, and reimbursement models, as well as state-level decisions, such as eligibility for optional populations.

SOURCE: Adapted from Hayes et al., 2016a.

disadvantage compared to organizations that do not serve large numbers of high-need patients.

One issue, addressed by Blumenthal and colleagues in a discussion paper from the National Academy of Medicine's series of discussion papers *Vital Directions for Health and Health Care* (Blumenthal et al., 2016a), is that most ACOs and performance- and risk-based plans still pay clinicians on a fee-for-service basis (Bailit et al., 2015). The authors of this discussion paper note that if individual providers or practice sites do not feel accountable for health outcomes, population health, and value, the diffusion of promising practices and models of care will be slow. Another concern the authors of this paper noted is the misalignment between investment and savings: too often, the savings realized by a successful care model accrue to payers, even though it is the providers who are expected to cover the up-front costs of staff training and other investments a program requires (Hong et al., 2014). Even if savings are shared with providers, the time for these complex delivery system reforms to produce savings can be several years (Jones et al., 2016), which can discourage providers from making the necessary initial investments. Ashish Jha from the Harvard T.H. Chan School of Public Health noted at the third workshop that realizing a return on investment with even good models is a long process. Google, he pointed out, took 8 or so years to become profitable, and to expect these models to yield large returns in 2 to 3 years will lead to disappointment. Similarly, Peikes and colleagues stated, "The providers we speak to report that it takes a year and a half or longer for interventions to really click." In the third workshop, David Atkins of the Department of Veterans Affairs underscored the need for support for the long-term experiments to demonstrate meaningful returns on investments, particularly given the reluctance of health system administrators to maintain programs that are not yielding short-term benefits.

When discussing payment policies, Anderson said in the third workshop, it is important to remember that just as there is not one kind of high-need patient, corresponding flexibility will be needed when it comes to payment models that incentivize high-value care for high-need patients. In particular, reimbursements for care coordination will have to reflect the different levels of patient need that require different levels of care coordination and that entail different degrees of risk. One issue that a breakout group in the second workshop raised was the need to allow organizations to have some flexibility in the benefits they offer as long as they can demonstrate that they are providing high-quality care for all of the high-need individuals in their care, not just a selected few. Flexibility could allow providers and health care organizations to target individuals who are most likely to benefit from particular delivery models if the focus is on improving quality of care rather than squeezing cost savings out of the system. In that regard, said John O'Brien from CareFirst Blue Cross Blue Shield, payment models should incentivize targeting patients who are most likely to benefit from the right interventions.

## WORKFORCE FOR COMPREHENSIVE HEALTH CARE

Both Peikes and Mangiante noted the importance of education and training in successful scaling efforts and the integration of services. Many clinicians, however, are not well trained to address the needs of high-need patients. Anderson commented that medical schools tend to emphasize "body parts" instead of the whole person and that nurses, who are often the care coordinators in these model programs, have little training in care coordination. In fact, he pointed out, care providers of all types—physicians and nurses, medical paraprofessionals, social workers, and housing and employment professionals—need to receive training on caring for and interacting with high-need individuals.

Thomas-Henkel and colleagues, in a study commissioned by the Robert Wood Johnson Foundation (Thomas-Henkel et al., 2015), noted that barriers to the spread and scale of care models for high-need patients include gaps in the training of current and newly graduated clinicians, a lack of interprofessional education among team members, low reimbursement rates that may limit recruitment efforts, and the need to develop more effective models for preventing and managing staff burnout given the professional and emotional challenges this work can entail. They highlighted the opportunity for academic health centers and professional societies to collaborate on developing new training and certification opportunities, particularly those that encompass team-based approaches and training in behavioral health, substance use disorders, and complex psychosocial factors. They also raised the point that there are new models of supervision involving the entire spectrum of traditional and nontraditional health care team members that care models are drawing upon to better serve high-need patients.

There is, therefore, a need and an opportunity for education and training to be integrated into the process of spreading and scaling any given model. Many models that have proven successful at improving care for high-need patients already put an emphasis on social supports, a trend noted by Molly Coye from the Network for Excellence in Health Innovation. As mentioned in Chapter 4, adoption of these models can lead to substantial changes in workforce roles as evidenced by assigning important roles in the care teams that integrate the broad range of social and behavioral health services high-need patients require to professionals who are often not considered key members of a health care team.

Credentialing programs, particularly for nontraditional health workers such as community health workers and peer support providers, could be developed to encourage workforce development to support high-need patients. Research has shown that properly trained community health workers can play a unique role in helping high-need patients navigate the health system, obtain necessary supportive resources, and build self-efficacy and health literacy; by doing so, they can improve patient experiences and outcomes and reduce hospital readmissions (Adair et al., 2012; Adair et al., 2013; Davis, 2013; Kangovi et al., 2014). For example, an Oregon program for high-need Medicaid patients, in which care teams were led by a nurse and two community health workers, reduced emergency department utilization from 78 percent in 2011 to 59 percent in 2013 (Takach and Yalowich, 2015).

Academic institutions, health systems, and other educators could develop curricula on the treatment and social support needs of high-need patients, including training on team-based care, patient engagement, care coordination across health and social sectors, and the social determinants of health. Key workforce sectors in need of training would include clinicians, nurses, physician assistants and other medical paraprofessionals, mental health professionals, social workers, pharmacologists, substance abuse providers, community health workers, peer providers, law enforcement officers, and housing and employment service providers. In particular, anyone involved in case management would benefit from special training that would include field training to observe delivery of evidence-based practices. Rajesh Davda from Cigna noted that physicians and nurses participating in Cigna's model program for high-need patients were generally poorly informed about care coordination when the program started. Once staff members were trained on matters of care coordination, they became the most effective instructors for training additional team members. This result prompted Cigna to develop learning collaboratives to foster workforce training. Anderson commented that high-need patients would also benefit from improved training for students in health care fields, which he believes would reduce the stigma associated with people with complex illnesses among clinical trainees, active professionals, and health system administrators, and produce a culture shift in the world of health care.

## REEXAMINE QUALITY MEASUREMENT

As value-based purchasing becomes more common, it will be essential to use quality measures—and the data that inform those measures—to improve care and offer incentives for providers to treat high-need patients. As Shari Ling from

CMS noted in her presentation at the third workshop, the proper use of measures creates transparency on cost and quality of care. Most quality measures currently in use, however, focus on specific conditions and whether methods of care for those conditions are effective. Ling pointed out that meaningful quality measures are too often setting-specific rather than being aligned with patient-centered outcomes that span various settings (Conway et al., 2013). Discussion during the second workshop noted that the current system of metrics is not designed in a way that encourages providers to organize care in the most effective manner.

While condition-specific measures are important, high-need patients are more than the sum of their individual diseases, and they have additional concerns beyond the appropriate care for each specific condition. To better reflect this reality, measures for assessing the performance of care models for high-need patients could indicate the degree of care coordination, quality of life, independence, and overall mental and physical health status. In her presentation at the third workshop, Helen Burstin from the National Quality Forum highlighted the need for measures based on patient-reported outcomes, patient involvement in the decision-making process regarding their care, and the quality of home and community-based services. In his remarks at the third workshop, Rick Kronick from the University of California, San Diego, added that measures should assess whether systems are stinting on some aspects of care, whether patient preferences are elicited and respected, and whether the communication between clinician and patient is of adequate quality. During the same workshop, Richard Frank from Anthem Blue Cross Blue Shield wondered if it would be possible to measure patient behavior in some manner that would provide a better understanding of engagement and motivation to change.

The Health and Medicine Division of the National Academies of Sciences, Engineering, and Medicine has undertaken a study of the relationships between social risk factors and performance measurement (National Academies of Sciences and Medicine, 2016a, 2016b), which will also inform metrics focused on the social determinants of health for the high-need population. According to Burstin, the availability of more appropriate measures of care relevant to high-need patients will enable health care financing to move beyond reliance on claims-based risk adjustment and instead enable differentiation of risk within clinical conditions and risk-based grouping of multiple chronic conditions. Such measures could also better account for unmeasured clinical complexity, such as patient frailty, disability, poor functional status, and multiple chronic conditions. Among existing measures, recent evidence suggests that because reliable case mix accommodation approaches are still evolving, hospitals caring for a higher proportion of patients with complex medical problems tend to fare worse on certain quality measures, such as readmissions (Joynt, 2013, 2017), and may experience high penalties under value-based purchasing programs, potentially creating a disincentive to caring for these individuals.

Burstin and other participants at the third workshop voiced their concern that the proliferation of measures and "measurement for measurement's sake" has become a burden to providers. A 2016 National Academy of Medicine Perspective, *Observations from the Field: Reporting Quality Metrics in Health Care* (Dunlap et al., 2016), offered the same concern. As David Dorr from the Oregon Health & Science University noted, it takes discipline to be parsimonious with measures. It is important for payers and health systems to choose measures that reflect realistic quality and accountability goals and to understand that programs may not demonstrate marked improvements for several years. Kronick remarked that measures should not be the only means used to improve quality of care. In his opinion, public policies related to quality improvement should emphasize methods of enhancing professional intrinsic motivation while recognizing the role of organizations to promote and facilitate that motivation by providing systematic feedback to physicians, technical assistance, and opportunities for providers to collaborate on projects to improve care.

## IMPROVE DATA INFRASTRUCTURE

Research shows that high-quality data and analytics are an essential component of effective models of care for high-need patients in that they are used to match high-need individuals with specific interventions (Bates et al., 2014; Bradley et al., 2016; Dale et al., 2016; Rajkumar et al., 2015). High-quality data are also needed to inform the types of measures discussed in the previous section. One major challenge Anderson noted is that there are many disparate systems that cannot easily share information, making it difficult to assess the requirements of high-need individuals and whether they are getting appropriate medical and social care. During the first workshop, Lisa Iezzoni from Harvard Medical School and the Mongan Institute for Health Policy at Massachusetts General Hospital said that reliable data are needed when identifying high-need patients to overcome the limitations of the diagnostic data by which chronic conditions are identified. International Classification of Diseases-Clinical Modification diagnostic codes may not fully capture disability, functional limitations, or frailty, while other measures of frailty and disability can carry biases, including cultural ones, or have gaming potential once reimbursements start being based on a particular measure. In addition, diagnostic claim codes may fail to capture the health of persons who have not received adequate care.

Iezzoni illustrated the problem of trying to use diagnostic claim codes to capture the health of persons who have not yet received adequate care by recounting the experience of the One Care program in Massachusetts, a dually capitated program begun on October 1, 2013, for Medicare and Medicaid enrollees ages 21 to 64. Capitation for Medicaid payments was set using rating categories that were initially assigned based on prior year MassHealth Medicaid claims for the program's participants. As soon as the One Care program started, it became obvious that many enrollees had higher needs than were indicated in their assigned rating category, in large part because they had not had Medicaid claims from a prior year since they had not received services in that prior year. Program administrators went to MassHealth and explained that they were not able to provide needed services because the capitated payments were too low because of the improper ratings. The solution was to conduct a functional status assessment once a person was enrolled in the One Care program and upgrade the rating based on that assessment. Before the upgrade, 59 percent of the enrollees had the lowest rating—a minimal care level for this high-need population—while after the upgrade only 40 percent of the enrollees fell into that category. At the same time, the percentage of independently living individuals in the highest-need categories rose from 19 percent to 35 percent. At the time of the second workshop, reimbursements were matched closely to costs, allowing One Care to provide the services its clients required.

Electronic health record (EHR) data, combined with claims data, can provide some additional insights about high-need patients that can help with managing complex patient populations. At the second workshop, Paul Bleicher from OptumLabs, a division of UnitedHealth Group, described how his organization uses these combined data sources to characterize the natural history of disease and identify specific issues and conditions associated with the biggest costs. Researchers at OptumLabs have also been using these data to examine patient clustering. They created a model that identifies patients who are at the highest risk of hospitalization and uses machine-learning clustering technologies to segment the top 10 percent of these patients. This analysis, he said, can support efforts to personalize care based on specific patient profiles.

Data from EHRs can provide a finer-grained picture of different groups of patients. For example, EHR data analysis reveals a substantial difference between prescriptions written and prescriptions filled. In the case of patients with hypertension who are not following established guidelines, this type of analysis can show whether the problem rests with the patient or the physician. Natural language processing of EHR data can create structured variables that provide detailed pictures of laboratory test results as they relate to care management, leading to the identification of possible drivers of hospital readmission, said Bleicher. He noted that significant amounts of granular information can be extracted from the EHR with natural language processing and used to gain a better understanding of patient outcomes. This value-added information includes clinical findings that are not available in claims data, such as preadjusted diagnostic and procedure information and temporal data about a patient's stay in the hospital. In addition, clinical notes can be mined for details, such as the risk of falling, that are not available in the EHR's structured data.

OptumLabs has been using this type of data analysis and mining to create predictive models that can help reduce hospitalizations. For example, a congestive heart failure predictive model uses a patient's prior health care use and clinical findings such as blood oxygenation, laboratory results, and vital signs to predict the risk of future hospitalization over the following 6 months. Individuals in the 95th percentile of risk were contacted and brought into the clinic for further assessment and treatment, with the result that hospital admissions for all patients with congestive heart failure were reduced by 60 percent from a year earlier. Bleicher explained that with claims data alone, the model was inadequate.

There are policy impediments—particularly with regard to sharing behavioral health and substance abuse information—that act as barriers to coordinating care for high-need individuals. Bleicher noted that standardizing EHR data across different systems is a major challenge, as is the fact that individual physicians capture and record data differently, and coders will code records and turn them into claims differently. For example, Bleicher stated that his team found from mining EHR data that between 11 and 31 percent of patients who had no billing code for diabetes over a 3-year period were in fact being treated for diabetes based on EHR-recorded laboratory results and prescriptions for diabetes medications. Jha added that claims data are limited when it comes to identifying which individuals either use or have used long-term care. Medicare data, for example, do not include long-term care; there is not a good national dataset with any granularity on long-term care services and supports and social services for the Medicare population. Federal, state, and local governments could identify barriers that currently inhibit data flow among the clinicians and organizations treating high-need populations and work to minimize those barriers while respecting patient privacy and data security.

In her presentation at the second workshop, Sandra Wilkniss from the National Governors Association said that access to data is one of the main challenges that states face in crafting effective policies to support better care for high-need, high-cost patients. In fact, some states have difficulty accessing even their own claims data to conduct necessary analyses, in part because state laws are barriers to effective data sharing. For the most part, explained Wilkniss, governors are taking a data-driven strategy to identify target populations primarily using Medicaid claims data, pharmacy data, and other types of high-level data to segment patient populations. A significant piece of this strategy involves what Wilkniss called "geospatial hot-spotting," or identifying communities with a disproportionate share of high-need, high-cost patients. She noted that high-value health care systems with which she has interacted are using data to conduct rapid-cycle evaluations of their programs' performance to continuously improve care and reduce costs.

In their work toward defining a state policy framework for integrating health and social services, McGinnis and colleagues at The Commonwealth Fund suggest that state- and community-level data-sharing tools could include integrated claims databases that link and share information across payers, service sectors, and provider networks (McGinnis et al., 2014). One example of such a tool is the Predictive Risk Intelligence System (PRISM) that Washington State developed to support care management for high-risk Medicaid patients (Court et al., 2011).

Integration of medical, behavioral, and social data, along with improved data sharing, is paramount to improving care for high-need patients. Integration and data sharing, however—whether across health and social services systems or within different components of the health care system—is a challenge that federal, state, and local partners could work together to address. One possible first step would be to identify the barriers to data flow among and within agencies and providers and then invest in activities to optimize information exchange. As noted at the third workshop, some of those barriers include federal confidentiality regulations (42 CFR Part II) that restrict sharing information about patients' history of alcohol and substance abuse; misinterpretation of data sharing rules in the Health Insurance Portability and Accountability Act of 1996 (HIPAA); and integration of EHRs and Prescription Drug Monitoring Program data.

Data could inform the strategic deployment of health care and social services resources. Toward that end, public and commercial payers could lead efforts to identify and share information about target populations and the potential for different models to positively affect the care of those populations. Incorporating screening tools for social risk and behavioral health variables into EHRs could serve as a source of data on patients that could be used to inform program targeting. Other sources of data could include claims, administrative data, data from patient encounters with health and social services systems, and patient-related geographical information. Medicare data, collected by CMS, could serve as a rich source of information about patients and program effectiveness. If these disparate sources of data could be integrated, they could be used to align targeting strategies across payers and to inform benefits, care delivery, and payment models.

As multiple speakers over the course of the three workshops noted, achieving the type of policy changes discussed here will not happen without the involvement of all stakeholders—federal, state, and local governments; providers; payers; and patients and caregivers. Moreover, changing policies and allowing organizations to adapt to those changes will not happen quickly. As Mary Anne Sterling from Connected Health Resources said at the conclusion of the third workshop: "I think what we are doing is culture change on a grand scale, probably [on a scale] that has never been done before in this country. I think we all need to encourage our peers that it is going to take some patience, maybe one or two do-overs, maybe a left or right turn along the way, but it is definitely doable."

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# 6

# COMMON THEMES AND OPPORTUNITIES FOR ACTION

At the outset of this collaborative initiative in February 2015, the goal established by the participants—the Peterson Center on Healthcare, the National Academy of Medicine, the Harvard T.H. Chan School of Public Health (HSPH), the Bipartisan Policy Center (BPC), and The Commonwealth Fund—was to advance our understanding about how to better manage the health of high-need patients through the exploration of patient characteristics and groupings, of promising care models and attributes, and of policy solutions to spread and scale models of care. Since the launch of this project, the pace of change in the field—from the demonstration of new models of care for high-need patients to state and federal governments launching initiatives aimed at better coordinating care for this patient population—has created an encouraging new dynamic that offers promise for addressing the challenge of caring for high-need patients and reducing the outsized cost of providing that care.

The key themes and lessons from the workshops, the workgroups, and the committee as a whole are summarized below, along with areas of opportunity for various stakeholders. Given that high-need patients often face challenges in receiving adequate care, including a lack of care coordination within the health care system, and that caring for these individuals is currently a key driver of health care spending, a notable theme voiced throughout the discussions was the call for bold policy action and system and payment reform efforts. The comprehensive team-oriented services required are not currently available in most settings, yet the potential gains to health care systems are considerable. Over the past 2 years, a number of promising innovations in care delivery have emerged, but there are systemic barriers to replicating and sustaining the key practices. The research and activities of this partnership have shown how essential it is to create a policy and regulatory environment built around payment models that incentivize coordinated care and support the integration of clinical care and social services. In addition, health systems would benefit from a "taxonomy" to segment high-need patients and match the appropriate interventions as well as from a set of key measures to support value-based payment.

## MAIN THEMES AND LESSONS

The first important lessons from this initiative are that the high-need patient population is diverse, complex, expensive, and often transient, and the heterogeneity of this population suggests that a similar diversity of care models will be needed to address the range of problems these individuals experience. At the same time, there is a need to strike a balance between standardized and customized approaches to care. In that regard, segmenting patients can be a useful tool for targeting care, but there is need for more real-world testing and refinement of approaches for segmenting patients in conjunction with care models demonstrated to work with certain subpopulations of high-need patients.

Another key lesson from this initiative is that just improving medical care for high-need patients will not address all of the challenges they face, nor will it lower the cost of care. To be successful, as the examples cited in Chapter 4 and in Appendix A demonstrate, care models for high-need patients will often need to address the social risk and behavioral health factors that play an outsized role in the lives of these individuals. Going forward, care models, policies, and assessment tools need to address social services and behavioral health needs in addition to those services normally considered the purview of health care systems. The final overarching lesson is that to be actionable, policy solutions must account for existing constraints and complexities arising from the lack of integration of medical, social, and behavioral services and with the way the United States finances care models.

In addition to those overarching lessons, a number of important themes emerged from the presentations and discussions in the three workshops and deliberations among the committee members. These included:

### *Segmentation and Taxonomy*

The high-need patient population comprises a heterogeneous group of individuals that have a diverse array of conditions, making segmentation of this population into a finite number of subpopulations an important consideration when attempting to match patients with appropriate models of care. With a patient taxonomy and menu of evidence-based care models, health systems would be better equipped to plan for and deliver targeted care based on patient characteristics, needs, and challenges and to identify gaps in their ability to deliver care for specific subgroups within their patient populations. Models of care for high-need patients must balance the need for standardized approaches for diverse populations with the need for personalization around individual patients' conditions, needs, and characterization. In that regard, having too many segment groups becomes too complex and impractical for broad implementation, but having too few segments makes groupings less meaningful and undermines the objective to be able to target care effectively.

The purpose and utility of segmentation must guide the development of a taxonomy for high-need patients and reflect the fact that a taxonomy will be a dynamic and interactive tool and that a single individual can move between taxonomic segments as their health—and therefore their care needs—change over time. Starting a taxonomy from a medical perspective has limitations, but it is a feasible starting point for most health systems, given the availability of data. Additionally, functional status can be "baked in" to the various medical segments in a taxonomy, with social risk factors and behavioral health considerations spanning all clinical/functional segments.

Barriers around data collection and use, particularly among smaller clinics and providers who lack a sophisticated and interoperable health information technology infrastructure, limit the use of patient segmentation. There is a need to improve our understanding of the transient nature of the high-need patient population and how health systems need to account for it when developing care delivery models.

### *Tailored Care and Care Coordination*

In the 2 years since the germination of this collaborative project, understanding and approaches to care delivery for high-need patients have evolved, with the demonstration that multiple care models can improve care. A successful care model is designed to respond to the goals and needs of patients, and an essential tool for standardizing and centering care around patient needs and goals—as well as for assessing patient needs across disease groups—is measuring functional status. Understanding patient needs and goals also requires better measurement of patient priorities, and meeting these goals will require flexible models of care.

Care coordination is critical for high-need patients, and improving care coordination will require the development of new workforce and training efforts. Such efforts are often costly, so special consideration should be given to potential care coordination approaches that help control costs. Additionally, improving care for high-need patients requires aligning the care system with social, economic, and behavioral programs and services, a task that will be difficult because of the fragmentation that exists in these fields.

While more research is needed to bolster the evidence base for care models and care model attributes that work for specific subpopulations of high-need patients, there is a broad consensus on universal attributes common to successful care models. There is broad agreement that the predominant location for delivering care for high-need patients should be in the home and community rather than in the hospital or nursing home whenever possible. Health systems can work with payers to better identify and target high-need patients and to test new practices, including the use of a taxonomy. A matching exercise demonstrated that individual care models can be targeted to specific groups based on characteristics and needs.

### *Payment Models*

Current economic and payment models oriented to individual conditions lead to inefficiencies and deficiencies in care processes that have particular impact on high-need patients, who often have a diverse array of conditions. Moreover, care models for high-need patients incur high, ongoing costs, and the long-term financing of these models must be considered when identifying policy solutions. Payers can actively support the adoption of care models or specific elements of care models that research has shown are effective at improving care for high-need patients and/or reducing the cost of care. Policy makers and payers can continue progress toward a value-based system using alternative payment models, including those that work within fee-for-service structures, to support more effective care for high-need patients.

### *Policy Opportunities to Encourage the Spread and Scale of Care Models*

Policy solutions must engage all aspects of care delivery, such as providing mental health support for home health aides and family caregivers, as well as accounting for existing system constraints and complexities (e.g., integration of medical and social financing of care models). Although having supportive policies in place can enable models to spread and scale, many care models do not scale because specifics of the models are not considered, such as the adaptations away from ideal conceptualizations to meet the on-the-ground realities or interpersonal dynamics and the role of leadership in success. Areas where policy changes could accelerate their widespread adoption and sustainability include the programmatic integration of social supports; care delivery and workforce; payment policy; quality measurement; and data infrastructure.

Furthermore, policies need to consider both state and federal perspectives to be broadly adopted. Federal structures such as the Federal Coordinated Health Care Office—also known as the Medicare-Medicaid Coordination Office or Office of the Dual—can serve an important role in bridging many different health care and social services sectors and populations.

Quality measures have proliferated and are often burdensome; a reevaluation of which limited set of measures is necessary to determine quality in specific circumstances would greatly benefit program administrators, regulators, health systems, payers, and providers. Tying payment incentives to particular measures simply because they can be measured can give too much weight to the importance of those aspects of care compared to elements that are less easily quantified.

## OPPORTUNITIES FOR STAKEHOLDER ACTION

A goal of this initiative has been to identify a path forward to produce the bold actions needed to improve the lives of the nation's 12 million high-need patients, and to reduce the unsustainably high cost of providing them with effective care and support (Hayes et al., 2016). Major stakeholders—health systems, payers, providers, patients and family or unpaid caregivers, researchers, and policy makers—have opportunities to address several key challenges to improving care for high-need patients. The following list highlights stakeholder opportunities discussed throughout the workshops:

- Refine the starter taxonomy based on real-world use and experience to facilitate the matching of individual need and functional capacity to specific care programs.
- Integrate and coordinate the delivery of medical, social, and behavioral services in a way that reduces the burdens on patients and caregivers.
- Develop approaches for spreading and scaling successful programs and for training a workforce capable of making these models successful.
- Promote payment reform efforts that further incentivize adoption of successful care models.
- Establish a small set of proven quality measures appropriate for assessing outcomes, including return on investment, and continuously improving programs for high-need individuals.
- Create road maps and tools to help organizations adopt models of care suitable for their particular patient populations.

In particular, action is needed by certain key stakeholders: health systems, payers, providers, patients and their care partners, researchers, and policy makers.

### *Health Systems*

- Engage patients and caregivers in design, implementation, and evaluation of care models.
- Work with payers to better identify and target high-need patients and to test new practices and tools, such as a taxonomy.

- Work with payers to develop interoperable electronic health records that can include functional and behavioral status and social needs.
- Identify the threshold for targeting programs to those elderly who are frail, since not all elderly need the intensive, coordinated care these programs provide.
- Use established metrics and quality improvement approaches to create an environment of continuous assessment and improvement for these models.
- Partner with community organizations, including schools and even prisons, as well as with patients, caregivers, and social and behavioral health service providers outside of the health care system to create patient-centered care plans.
- Assess established culture and promote changes needed to institute new and successful care models, blending medical, social, and behavioral approaches.

### *Payers*

- Actively support the adoption of care models or specific elements of models that research has shown to be effective at improving care for high-need patients.
- Work with policy makers to continue progress toward a value-based system, using alternative payment models, including those that work within a fee-for-service structure, to support more effective care for high-need patients.
- Expect that return on investment for most models of care for high-need patients will take time and that a return in 2 to 3 years is unlikely.
- Develop financing models to provide social and behavioral health services that will both improve care and lower the total cost of care for high-need patients, recognizing that even cost-neutral programs are worth supporting if the outcome is positive for patients.
- Support recognition, training, and education for patients and caregivers as part of care teams.
- Lead efforts to identify and share information about high-need patients and the potential for different models to positively affect the care of those populations.

### *Providers*

- Meet patients in their communities or connect patients to community and other social resources and accept that much of the care they need will be delivered by family and unpaid caregivers or professionals outside of the health care system.
- Learn to work collaboratively in teams, and understand that many successful care models work best when everyone works at the top of their licenses.
- Engage with patients, care partners, and their caregivers in the design and delivery of care.

- Fully adopt the proven practices of health literacy to improve patients' and caregivers' ability to follow care plans developed with their input.
- Identify and work to change cultural norms that may hinder adoption of successful care models.
- Identify and engage patients' care partners as integrated team participants.

### *Patients and Their Care Partners*

- Seek out formal training and education experiences to enhance care, understand complex medical situations, limit injuries and other errors, and identify problems earlier.
- Explore with your care team the potential benefits of home-based care, including improved financial, social, and psychosocial outcomes.
- Request formal recognition as part of the care team.
- Participate in active communication with providers regarding quality of care, needs, and services.
- Work with a care coordinator or care coordination team to amplify self-advocacy efforts and fully utilize care models.
- Contribute to the development of quality measures to assist in better decision making around care and care delivery.

### *Research community*

- With the involvement of patients, caregivers, and other key stakeholders, continue research on approaches for identifying and segmenting high-need patients in practice settings and matching those individuals with successful care models.
- Gather better data for care models that work, including the effective integration of social and behavioral health services.
- Develop and test a parsimonious set of metrics for measuring outcomes and return on investment for models of care.
- Identify the best methods of care coordination, workforce training, and education for caregivers.
- Study effective culture change implementation techniques to promote spread and scale of successful care models.

### *Policy Makers*

- Increase and expand efforts to engage patient and caregiver involvement in discussions around policy options for improving care and reducing costs for high-need patients.
- Harmonize and coordinate Medicare and Medicaid programs to increase access to needed services and to reduce the burden on patients and caregivers.

- Continue payment policy reforms and alignment initiatives to incentivize pay-for-performance instead of fee-for-service.
- Incentivize adoption and use of interoperable electronic health records that include functional, behavioral health, and social factors.
- Create state- and community-level data-sharing tools which include integrated claims databases that link and share information across payers, service sectors, and provider networks, such as the Predictive Risk Intelligence System (PRISM) that Washington State developed to support care management for high-risk Medicaid patients.
- Explore the expansion of programs to mitigate financial strain of caregiving, like Medicaid's Cash & Counseling.
- Modify existing regulations, such as 42 CFR Part II and data-sharing rules in the Health Insurance Portability and Accountability Act of 1996 (HIPAA), to improve data flow among and within agencies and providers.

## CONCLUSION

Common to the presentations and discussions among participants was the notion that improving the care management of high-need patients will require engagement and coordination of a broad range of stakeholders at multiple levels. While each stakeholder sector individually may impact a patient's life, a community, or even a regional health delivery system, one of the most expensive and challenging populations for the current health care system will remain underserved until there is a unified effort—rather than small, incremental steps—to improve care for the nation's high-need patients and to reduce the cost of delivering that care. It is important that different stakeholder groups convene to discuss opportunities for actions and improvement, using the potential activities identified here to guide discussion and action. The taxonomy to guide care team and care model design needs further discussion, refinement, testing, and validation, as do the implementation tactics and practices to determine elements of successful care models. Policies to accelerate the spread and scale of proven models, new workforce development initiatives, suitable quality measures, and expanded data infrastructure are all at the forefront of the national health care goals of balancing quality and associated costs. Sustained attention to these areas, too, is needed.

## REFERENCES

Hayes, S. L., C. A. Salzberg, D. McCarthy, D. C. Radley, M. K. Abrams, T. Shah, and G. F. Anderson. 2016. *High-need, high-cost patients: Who are they and how do they use health care?* New York: The Commonwealth Fund.

# APPENDIXES

# APPENDIX A

## CARE MODEL CASE STUDIES

The care models described here were presented or discussed as part of one of the workshop proceedings or came up during the deliberations of the planning committee or taxonomy workgroup.

### ALIGNMENT HEALTHCARE

| **Target population** | **Matched Segment** |
|---|---|
| The 20 percent of a health system's members who are frail, or have complex conditions or several chronic illnesses, and who account for 80 percent of health care spending. (Furman, 2015; Kao, 2016) | Not used in matching exercise |

**Intervention Components**

- Alignment Healthcare's program is built around a new type of clinician, the extensivist, a highly trained physician who cares for five or six patients in the hospital, instead of the 30 that a hospitalist would see, and who not only treats the patient but also speaks to the patient's family and primary care physician every day. (Furman, 2015)
- Any member of a participating health care system who was frail, whether posthospitalization or for any other reason, can be seen at a care center by a team that included the extensivist, nurse practitioners, social workers, and case workers functioning at the top of their licenses. These care centers also have teams of psychiatrists, psychologists, and psychiatric nurses who integrate mental health care and extend that care into nursing homes, skilled nursing facilities, and the patient's home. (Furman, 2015)
- Care centers incorporate nutritional counseling, podiatry services, and other key components for seniors. (Furman, 2015)
- Technology and advanced analytics play a key role in supporting the care model, with the goal being to use analytical tools to develop earlier predictive patterns that inform preventive interventions before high-cost interventions are needed. (Furman, 2015)

**Outcomes**

| Well-being | Utilization | Cost |
|---|---|---|
|  | **X** | **X** |

**Notes**

- The program eliminates copayments for mental health care, which decreased costs and improved outcomes. (Furman, 2015)

SOURCES: Furman, 2015; Kao, 2016.

## CARE MANAGEMENT PLUS

| **Target population** | **Matched Segment** |
|---|---|
| Generally adults 65 years and older, who have multiple comorbidities, diabetes, frailty, dementia, depression and other mental health needs; physician referral. (Care Management Plus, 2017; McCarthy, 2015) | Advancing illness with social risk and behavioral health factors<br>Major complex chronic with social risk and behavioral health factors |

**Intervention Components**

- “Specially trained care managers (usually RNs or social workers) located in primary care clinics perform person-centered assessment and work with families and providers to formulate and implement a care plan.” (McCarthy, 2015)
- “Care manager ensures continuity of care and regular follow-up in office, in the home, or by phone.” (McCarthy, 2015)
- “Continuity of care enhanced by specialized information technology system.” (McCarthy, 2015)
- “Care manager provides coaching and self-care education for patients and families.” (McCarthy, 2015)

**Outcomes**

| Well-being | Utilization | Cost |
|---|---|---|
| X | X | |

**Notes**

- Utilization results only significant among patients with diabetes. (Dorr, 2008)

SOURCES: Care Management Plus, 2017; Dorr, 2008; McCarthy, 2015

### CAREFIRST'S PATIENT-CENTERED MEDICAL HOME PROGRAM

| Target population | Matched Segment |
|---|---|
| The 12 percent of CareFirst BlueCross Blue Shield members with advanced or critical illness and multiple chronic illnesses who account for 72 percent of the system's hospital admissions and 63 percent of the total medical costs. (O'Brien, 2015) | Not used in matching exercise |

**Intervention Components**

- An incentive-based program for primary care physicians that rewards them for managing patients and influencing the whole medical dollar, including the 94 percent of the plan's expenditures on specialists, inpatient care, outpatient care, and prescription drugs. (O'Brien, 2015).
- Credible data and analytic support provided through a dedicated informational portal and high-touch, superior technical support promote collaboration among physicians, local nurses, and other health professionals to manage members' care. These analytics provide primary care physicians with information to help them spot potential hot-spot individuals within their panels and then provide links to additional services for those patients. (O'Brien, 2015)
- Primary care physicians collaborate with the specialists and other medical professionals of their choice, informed by analytics that provide the primary care physician with cost and quality metrics for those other professionals, to more closely coordinate and track care for the sickest patients or those at highest risk for future illness. (CareFirst, 2017; O'Brien, 2015)
- Care plans are supported by local community-based care teams headed by a registered nurse. (O'Brien, 2015)

**Outcomes**

| Well-being | Utilization | Cost |
|---|---|---|
|  | X | X |

**Notes**

- "Participating providers receive a 12 percentage point increase in their fee schedule, agreeing to higher compensation in exchange for increased effort and time devoted to improved coordination of care. They also receive additional new fees for developing care plans for select patients with certain chronic or multiple conditions and additional fees for keeping the care plans up to date." (CareFirst, 2017)
- Incentives (paid as fee increases) can be earned tied to better outcomes for the patients under the care of each panel of primary care physicians in the program. (O'Brien, 2015)
- "Of the 291 PCMH panels participating in 2013, 69 percent earned an outcome incentive award averaging 36 percent, and of the panels participating in 2011-2013, 37 percent earned the award in all three years." (O'Brien, 2015)

SOURCES: CareFirst, 2014; CareFirst, 2017; O'Brien, 2015

### CAREOREGON'S HEALTH RESILIENCE PROGRAM

| **Target population** | **Matched Segment** |
|---|---|
| The 10 percent of CareOregon's Medicaid members who incur 50 percent of the plan's medical expenses. Members enrolled in the Health Resilience program were more likely to experience high disease burden and psychosocial challenges. The majority of those who enrolled have experienced significant trauma in their lives. (Ramsay, 2015) | Not used in matching exercise |

**Intervention Components**

- Health Resilience Specialists are paired with primary health homes and specialty practices to provide individualized high touch and trauma-informed support to patients with exceptional utilization with the primary emphasis of mitigating social determinants of health. (CareOregon, 2014)
- Staff are supported by clinically licensed supervisors who provide daily and weekly guidance, mentoring, and clinical supervision. (CareOregon, 2014)
- The Health Resilience Specialists, who have mental health and addictions training, an in-depth understanding of trauma dynamics, and extensive outreach experience with the Medicaid population, are paid and administered by CareOregon but operate as part of a primary care team. (CareOregon, 2014)
- The program also subcontracts with regional and culturally specific peer mentors to build longer-term sustainability into the program. (CareOregon, 2014)

**Outcomes**

| Well-being | Utilization | Cost |
|---|---|---|
| X | X | X |

**Notes**

- CareOregon's six programmatic principles of trauma-informed care include: reducing barriers; providing client-centered care; increasing transparency; taking time and building trust; avoiding judgment and labels; and providing care in a community-based setting. (CareOregon, 2014)
- Measures of access and quality increased significantly, as did member access to help with food, housing, and transportation. (Ramsay, 2015)
- Clinical staff rated the program highly on measures of care coordination, effectiveness at caring for high-need Medicaid patients, and care team satisfaction. (Ramsay, 2015)

SOURCES: CareOregon, 2014; Ramsay, 2015

## CHENMED

| **Target population** | **Matched Segment** |
|---|---|
| Program serves 60,000 moderate- to low-income Medicare members in more than 40 locations in six states. More than 30 percent of the members are dual-eligibles. (Klein, 2016) | Not used in matching exercise |

**Intervention Components**

- For-profit model offers a one-stop-shop approach for delivering multispecialty services in the community utilizing a smaller physician panel size of 350 to 450 patients, allowing for intensive health coaching and preventive care. (Coye, 2016)
- Collaborative peer review, powered by customized information technology, is a central feature of this system. (Tanio, 2013)
- ChenMed practices offer a broad set of additional services on site, including dental care, digital x-ray, ultrasound, and acupuncture, as well as five to 15 high-volume specialists. (Tanio, 2013)
- Because access to care is a major issue with seniors, the practice provides door-to-door van transportation at no charge. (Tanio, 2013)
- To boost medication adherence, each practice has on-site physician pharmacy dispensing, which encourages patients to discuss side effects and other issues that interfere with medication adherence. (Tanio, 2013)

**Outcomes**

| Well-being | Utilization | Cost |
|---|---|---|
| X | X | |

**Notes**

- For-profit Medicare Advantage model of managed care that accepts capitated payments and is at full risk for patients' total health care costs. (Tanio, 2013)
- ChenMed's customized electronic health record and decision support software requires less documentation than most off-the-shelf electronic health records, allowing physicians to make concise notes and enhance productivity. (Hostetter, 2016)
- Ninety percent of ChenMed's diabetic patients reported they had an improved understanding of their medications and 80 percent reported improved communication with their physician. New Promoter Scores, a measure of how likely a member would be to refer a practice to a friend or colleague, was 90 percent compared to a national average for health insurance companies of 12 percent. (Klein, 2016)

SOURCES: Coye, 2016; Hostetter, 2016; Klein, 2016; Tanio, 2013

## CIGNA COLLABORATIVE CARE MODEL

| **Target population** | **Matched Segment** |
|---|---|
| High-risk, high-cost patients identified based on having multiple comorbidities and through Cigna's proprietary predictive modeling. (Davda, 2015) | Not used in matching exercise |

**Intervention Components**

- Cigna Collaborative Care, modeled after accountable care organizations, embeds a care coordinator, typically a registered nurse, in a physician group with a substantial primary care component. (Davda, 2015)
- Care coordinators work closely with Cigna's case managers to ensure that high-need individuals receive the screenings, follow-up care, educational materials, and access to Cigna's clinical support programs, such as those for chronic condition management and lifestyle management, to help them manage their health better. (Davda, 2015)
- Cigna uses proprietary predictive modeling and analytics to provide the embedded care coordinator with a daily list of which members of a practice are in the hospital and will require a transition of care call at the time of discharge, and a monthly list of high-risk patients with multiple gaps in care, such as medication compliance issues and multiple emergency department visits. (Davda, 2015)

**Outcomes**

| Well-being | Utilization | Cost |
|---|---|---|
| **X** |  | **X** |

**Notes**

- Cigna offers ongoing training and best practice sharing for the care coordinators and connects them with other Cigna resources such as case managers, wellness coaches, and pharmacists to expand the clinical resources available to their patients. (Davda, 2015)
- The medical group is rewarded through a pay for value structure if it meets targets for improving quality and lowering medical costs. (Cigna, 2014)
- Large physician groups active two or more years have shown 3 percent better total medical cost and a 2 percent increase in quality performance. The return on investment for these "mature" practices is 2:1. (Davda, 2015) "Three of the highest-performing arrangements have each removed more than $3 million from the health care system." (Cigna, 2017)

SOURCES: Cigna, 2014, 2017; Davda, 2015

## COMMONWEALTH CARE ALLIANCE

| Target population | Matched Segment |
|---|---|
| Dual-eligible individuals 65+ in Senior Care Options program or dual-eligible individuals age 64 and younger in Disability Care Program, part of the Massachusetts One Care financial alignment demonstration. (McCarthy, 2015) | Non-elderly disabled |

**Intervention Components**

- “Provides enhanced primary care and care coordination through multidisciplinary clinical teams led by nurse practitioners.” (McCarthy, 2015)
- “After a comprehensive assessment, individualized care plans are developed to promote independence and functioning.” (McCarthy, 2015)
- “Integration of behavioral health care for those who need it.” (McCarthy, 2015)
- “Care team available 24/7 in the home, in the hospital, or at the doctor’s office.” (McCarthy, 2015)
- “Patients’ records available 24/7 in proprietary electronic health record system.” (McCarthy, 2015)

**Outcomes**

| Well-being | Utilization | Cost |
|---|---|---|
| | **X** | |

SOURCE: McCarthy, 2015

### COMPLEX CARE PROGRAM AT CHILDREN’S NATIONAL HEALTH SYSTEM

| **Target population** | **Matched Segment** |
|---|---|
| Medically complex children with 2 or more chronic conditions. (Children’s National, 2017) | Children with complex needs |

**Intervention Components**

- “Provides ongoing care coordination between visits including communication with family, primary care providers, and specialists.” (Children’s National, 2017)
- “Helps families negotiate the health care system and provide a link to community resources.” (Children’s National, 2017)
- “Creates written care plans with the family to share with the primary care provider.” (Children’s National, 2017)
- “Provides comprehensive care coordination through a team approach that includes nurse case management, parent navigators, and social work.” (Children’s National, 2017)

**Outcomes**

| Well-being | Utilization | Cost |
|---|---|---|
| | X | |

**Notes**

- Outcomes unavailable.

SOURCE: Children’s National, 2017

## COMPREHENSIVE CARE PHYSICIAN (CCP) MODEL (UNIVERSITY OF CHICAGO)

| **Target population** | **Matched Segment** |
|---|---|
| Patients with multiple chronic illnesses who had at least one hospitalization in the previous year. (The University of Chicago, 2017) | Not used in matching exercise |

**Intervention Components**

- Five dedicated CCPs lead teams of advanced practice registered nurses, social workers, care coordinators, and other specialists best suited to address the needs of patients who are expected to average 10 hospital days per year. (Meltzer, 2014)
- Each CCP has a panel of approximately 200 patients and serves as both primary care physician and supervisor for each panel member's care while hospitalized. (Meltzer, 2014)
- The five CCPs visit hospitalized patients each morning while the other members of the care team provide care at the physicians' clinics. One CCP is assigned afternoon rounds and weekend duties. "Providing these physicians with a high volume of inpatients and locating their clinics in or near the hospital allows them to offer many of the same benefits that hospitalists provide while offering the additional benefit of continuity across settings and over time." (Meltzer, 2014)
- "The CCP or other care team member makes postdischarge calls to the patient and both telephone and text messages are used to keep the care team and patient connected." (Meltzer, 2014)

**Outcomes**

| Well-being | Utilization | Cost |
|---|---|---|
| (study not yet completed) | (study not yet completed) | (study not yet completed) |

**Notes**

- Shared saving based on risk-adjusted estimates of predicted costs.

SOURCES: Meltzer, 2014; The University of Chicago, 2017.

### COMPREHENSIVE PATIENT-CENTERED MEDICAL HOME INITIATIVE

| **Target population** | **Matched Segment** |
|---|---|
| This model is being tested in seven states encompassing 31 payers, nearly 500 practices, and approximately 300,000 Medicare beneficiaries (Taylor, 2015) | Not used in matching exercise |

**Intervention Components**

- A medical home model in which practices first risk-stratify their patients within physician panels. (Taylor, 2015)
- Practices use care management methods, including care planning, registries, proactive care monitoring, and enhanced access that include home-based and team-based care. (Taylor, 2015)
- While the program is not prescriptive per se, care management activities must include at least one of the following: behavioral health integration, self-management or support for beneficiaries, or medication management. (Taylor, 2015)

**Outcomes**

| Well-being | Utilization | Cost |
|---|---|---|
| (study not yet completed) | (study not yet completed) | (study not yet completed) |

**Notes**

- Practices receive monthly case management payments of $20 per month per patient over the first two years of the program and $15 per month for years three and four. They also have an opportunity to earn shared savings on reductions in total Part A and B Medicare expenditures. (Taylor, 2015)

SOURCE: Taylor, 2015

## GEISINGER'S PROVENHEALTH NAVIGATOR PATIENT-CENTERED MEDICAL HOME

| **Target population** | **Matched Segment** |
|---|---|
| Elderly Medicare patients. | Not used in matching exercise |

**Intervention Components**

- "Patient-centered primary care." (Maeng, 2012)
- "Integrated population management." (Maeng, 2012)
- "A medical 'neighborhood' that aligns key community partners, such as home health agencies, skilled nursing facilities, outpatient and ancillary services, hospital facilities, and community pharmacies. Comprehensive quality improvement. Value-based reimbursement redesign that includes a quality, outcome-based pay-for-performance program." (Maeng, 2012)

**Outcomes**

| Well-being | Utilization | Cost |
|---|---|---|
| | **X** | **X** |

**Notes**

- "The program aims to move resources further upstream in the primary care settings to reduce downstream costs from the highest acuity settings resulting from uncontrolled exacerbations of chronic disease, hospital readmissions, and unnecessary duplication of services." (Maeng, 2012)

SOURCES: Maeng, 2012; xG Health Solutions, 2017

| GRACE | |
|---|---|
| **Target population**<br>Low-income seniors with medical complexity. | **Matched Segment**<br>Major complex chronic with social risk and behavioral health factors |

**Intervention Components**

- "Support team consisting of advanced practice nurse and social worker work with elderly in the home and community." (McCarthy, 2015)
- "In-home assessment and specific care protocols inform individualized care plan." (McCarthy, 2015)
- "Support team works closely with larger interdisciplinary care team." (McCarthy, 2015)
- "Patient education and self-management plans include tools for low-literacy seniors." (McCarthy, 2015)

**Outcomes**

| Well-being | Utilization | Cost |
|---|---|---|
| | X | X |

**Notes**

- "Program was cost-neutral in the first two years among high-risk patients, and cost-saving in the third year (postintervention)." (McCarthy, 2015)

SOURCES: Counsell, 2009; Indiana University, 2017; McCarthy, 2015

### GUIDED CARE

| **Target population** | **Matched Segment** |
|---|---|
| "Older adults with multiple chronic conditions." (McCarthy, 2015) | Major complex chronic |

**Intervention Components**

- "Predictive modeling and 12 months of claims data used to identify the 20 to 25 percent of patients most at risk of needing complex care in the near future." (McCarthy, 2015)
- "RNs trained in complex care management perform in-home assessments and develop care plans to coordinate care with multidisciplinary providers." (McCarthy, 2015)
- "Patient education and self-management strategies focus on addressing issues before hospitalization becomes necessary." (McCarthy, 2015)

**Outcomes**

| Well-being | Utilization | Cost |
|---|---|---|
| **X** | **X** | |

SOURCE: McCarthy, 2015

### HEALTH CARE HOME (HCH) PROGRAM (OF MINNESOTA)

| **Target population** | **Matched Segment** |
|---|---|
| Medicare and Medicaid recipients who have two or more chronic illnesses. (Minnesota Department of Health, 2017) | Not used in matching exercise |

**Intervention Components**

- Three strategic components of the HCH program are its certification process, a quality improvement process, and a learning collaborative. (LaPlante, 2015)
- At the time of certification, each clinic is evaluated by a team that includes a regional nurse planner, a consumer or patient under contract with her agency, and a community nurse or other community health professional. The purpose of the site visit is to ensure that clinics have enacted processes to redesign primary care. (LaPlante, 2015)

**Outcomes**

| Well-being | Utilization | Cost |
|---|---|---|
| **X** | **X** | **X** |

**Notes**

- Racial disparities were significantly smaller for Medicaid, Medicare, and dual-eligible beneficiaries served by HCH versus non-HCH clinics for most measures. (Wholey et al., 2015)
- HCH organizations report being better able to capture care coordination payments from Medicaid than from Medicare, private managed care, or commercial insurers. (Wholey et al., 2015)
- Financial incentives were not a primary driver of a clinic or organization participating in the HCH initiative. (Wholey et al., 2015)
- Minnesota did develop a care coordination tier assignment tool to support care coordination billing. (Wholey et al., 2015)

SOURCES: LaPlante, 2015; Minnesota Department of Health, 2017; Wholey et al., 2015.

### HEALTH QUALITY PARTNERS

| **Target population** | **Matched Segment** |
|---|---|
| “Medicare beneficiaries with chronic conditions.” (McCarthy, 2015) | Major complex chronic<br>Multiple chronic |

**Intervention Components**

- “Registered nurse care coordinators focus on changing patient behavior.” (McCarthy, 2015)
- “Focus on frequent in-person contact with both patients and physicians.” (McCarthy, 2015)
- “Evidence-based patient education including condition-specific self-monitoring training.” (McCarthy, 2015)

**Outcomes**

| Well-being | Utilization | Cost |
|---|---|---|
| | X | X |

**Notes**

- Reduced average monthly Medicare Part A and B expenditures by 21 percent. (Brown, 2017)

SOURCES: Brown et al., 2017; McCarthy et al., 2015

## HEALTH SERVICES FOR CHILDREN WITH SPECIAL NEEDS

| **Target population** | **Matched Segment** |
|---|---|
| High-need, high-cost pediatric patients. | Under 65 disabled<br>Children with complex needs with social risk and behavioral health factors |

**Intervention Components**

- Provides a care manager to coordinate appointments, to assist with arranging transportation, and to connect patients with community resources and organizations. (HSCSN, 2016)
- Care Manager works with providers and patients to create a care coordination plan that's updated at least twice per year. (HSCSN, 2016)

**Outcomes**

| Well-being | Utilization | Cost |
|---|---|---|

**Notes**

- Outcomes unavailable

SOURCES: Health Services for Children with Special Needs, Inc., 2016

## HOMELESS PATIENT ALIGNED CARE TEAM (H-PACT)

| **Target population** | **Matched Segment** |
|---|---|
| Homeless veterans coming to the emergency department with complex medical and social problems. | Non-elderly disabled with social risk and behavioral health factors |

**Intervention Components**

- "Located on the campuses of Veterans Affairs medical centers, community-based outpatient clinics, and Community Resource and Referral Centers, H-PACT clinics colocate medical staff, social workers, mental health and substance use counselors, nurses, and homeless program staff. These professionals form a team that provides Veterans with comprehensive, individualized care, including services that lead to permanent housing." (US VA, 2017)

**Outcomes**

| Well-being | Utilization | Cost |
|---|---|---|
|  | X |  |

**Notes**

- Launched in 2012, so limited data are available but evidence exists to support decreased utilization.

SOURCE: US Department of Veterans Affairs, 2017

### HOSPITAL AT HOME

| **Target population** | **Matched Segment** |
|---|---|
| Older patients who are acutely ill and require hospital-level care. (Johns Hopkins, 2013) | Advancing illness |

**Intervention Components**

- “Potentially eligible patients are identified in the hospital emergency department or ambulatory care site. If they meet the validated criteria and consent to participate, they are evaluated by a physician and transported home, usually via ambulance.” (McCarthy, 2015)
- “One-on-one nursing for initial stage and at least daily nurse and physician visits thereafter.” (McCarthy, 2015)
- “Both nurses and physicians on call around-the-clock for urgent or emergent visits.” (McCarthy, 2015)
- “Some diagnostic services and treatments performed in home setting.” (McCarthy, 2015)
- “Same criteria and guidelines are used to judge patient readiness for transition to skilled nursing facility, or discharge from Hospital at Home as from hospital.” (McCarthy, 2015)

**Outcomes**

| Well-being | Utilization | Cost |
|---|---|---|
| **X** | **X** | **X** |

**Notes**

- Utilization outcomes were based on a prospective quasi-experiment. (McCarthy, 2015)
- Per patient average costs were 19 percent lower than similar inpatient per-patient average costs but excluded physician costs. (McCarthy, 2015)
    - Cost savings were due to lower average length of stay and few diagnostic and lab tests. (McCarthy, 2015)
    - Cost savings did not factor in physician costs. (McCarthy, 2015)

SOURCES: Johns Hopkins School of Medicine, 2013; McCarthy, 2015

## IMPACT

| Target population | Matched Segment |
|---|---|
| “Older adults suffering from depression.” (McCarthy, 2015) | Frail elderly with social risk and behavioral health factors<br>Multiple chronic with social risk and behavioral health factors |

**Intervention Components**

- “Collaborative care: Primary care physician works with depression care manager (e.g., nurse, social worker, or psychologist supported by medical assistant or other paraprofessional) to develop and implement treatment plan including antidepressant medication and/or short-term counseling. Team includes consulting psychiatrist.” (McCarthy, 2015)
- “Care manager also educates patient about depression and coaches in self-care.” (McCarthy, 2015)
- “Providers utilize ongoing measurement and tracking of outcomes with validated depression screening tool, such as Patient Health Questionnaire-9, and adapt care to changing symptoms.” (McCarthy, 2015)
- “Once a patient improves, case manager and patient jointly develop a plan to prevent relapse.” (McCarthy, 2015)

**Outcomes**

| Well-being | Utilization | Cost |
|---|---|---|
| X |  | X |

**Notes**

- “Total health care costs for IMPACT patients were $3,300 lower per patient on average than those of patients receiving usual primary care, net of program cost.” (McCarthy, 2015)

SOURCE: McCarthy, 2015

### INDEPENDENCE AT HOME DEMONSTRATION

| **Target population** | **Matched Segment** |
|---|---|
| "Medicare beneficiaries with multiple chronic conditions." (CMS, 2016) | Not used in matching exercise |

**Intervention Components**

- Model that uses home-based primary care teams directed by physicians and nurse practitioners designed to improve health outcomes and reduce expenditures for Medicare beneficiaries with multiple chronic conditions. (CMS, 2016)
- "Selected participants, including primary care practices, will provide home-based primary care to targeted chronically ill beneficiaries for a five-year period. Participating practices will make in-home visits tailored to an individual patient's needs and preferences." (CMS, 2016)
- "This focus on timely and appropriate care is designed to improve overall quality of care and quality of life for patients served, while lowering health care costs by forestalling the need for care in institutional settings." (CMS, 2016)

**Outcomes**

| Well-being | Utilization | Cost |
|---|---|---|
| (study not yet completed) | (study not yet completed) | (study not yet completed) |

**Notes**

- "The Independence at Home Demonstration will award incentive payments to health care providers who succeed in reducing Medicare expenditures and meet designated quality measures." (CMS, 2016)

SOURCE: CMS, 2016

## MIND AT HOME (JOHNS HOPKINS UNIVERSITY)

| **Target population** | **Matched Segment** |
|---|---|
| Elderly with memory disorders. | Frail elderly with social risk and behavioral health factors |

**Intervention Components**

- "Links people with dementia and their caregivers to community-based agencies, medical and mental health care providers, and community resources." (JHU, 2014)
- "Delivered by an interdisciplinary team comprised of trained nonclinical community workers and mental health clinicians, who conduct comprehensive in-home dementia-related needs assessments and provide individualized care planning and implementation." (JHU, 2014)
- "The team uses six basic care strategies: resource referrals, attention to environmental safety, dementia care education, behavior management skills training, informal counseling, problem-solving, as well as ongoing monitoring, assessment, and planning for emergent needs." (JHU, 2014)
- "Each component of the intervention is based on best practice recommendations and evidence from prior research, and is combined for maximum impact." (JHU, 2014)
- Provides individualized needs assessments, care planning, and monitoring for both patient and caregiver. (JHU, 2014)
- Provides education, skills training, and self-management support for patients and families. (JHU, 2014)
- Model is home-based, linking medical and community-based care services delivered by nonclinical staff with support from mental health practitioners. (JHU, 2014)

**Outcomes**

| Well-being | Utilization | Cost |
|---|---|---|
| X | X | |

**Notes**

- "Primary outcomes were time to transfer from home and percent of unmet needs" (both significant effects). (Samus, 2014)

SOURCES: Johns Hopkins University, 2014; Samus et al., 2014

## MISSIONPOINT HEALTH PARTNERS

| **Target population** | **Matched Segment** |
|---|---|
| Serving 250,000 members in seven states. (MissionPoint, 2017b) | Not used in matching exercise |

**Intervention Components**

- MissionPoint Health Partners is a population health management organization that uses a global financing model to provide a clear picture of the resources needed for this patient population and enable personalized responses to patient needs and iterative learning and resource shifting. This iterative approach, supported by a clear leadership commitment, is a major feature of the program's profit-and-loss strategy. (Coye, 2016)
- "Central to the MissionPoint model is [its] wraparound clinical management framework, a skilled team of Health Partners who help members solve problems and connect their medical care with everyday life. . . . [The Health Partners, who] are experienced health care professionals and social workers, are provided at no cost to members and help support members when they most need it, such as after an emergency department visit, hospital stay, or diagnosis of a chronic disease." (MissionPoint 2017a)
- Advanced analytics notify Health Partners "of members' health events within the network and provide them with relevant medical data so that the Health Partners can work hand-in-hand with members and caregivers to . . . navigate the health care system, problem-solve complex issues, and remove barriers to self-care." (MissionPoint, 22017a)

**Outcomes**

| Well-being | Utilization | Cost |
|---|---|---|
| X | X | X |

**Notes**

- Medicare shared savings plan and additional incentives for expanding member access with extended hours or email support.
- A key component of MissionPoint's success in improving the health status of its members while lowering overall health care costs is its ability to create clinically integrated networks in the communities it serves.

SOURCES: Coye, 2016; MissionPoint, 2017a, 2017b.

## NAYLOR TRANSITIONAL CARE MODEL (UNIVERSITY OF PENNSYLVANIA)

| **Target population** | **Matched Segment** |
|---|---|
| "Hospitalized, high-risk older adults with chronic conditions." (McCarthy, 2015) | Frail elderly |

**Intervention Components**

- "Multidisciplinary provider team led by advanced practice nurses engages in comprehensive discharge planning." (McCarthy, 2015)
- "Three-month postdischarge follow-up includes frequent home visits and telephone availability." (McCarthy, 2015)
- "Involve patients and family members in identifying goals and building self-management skills." (McCarthy, 2015)

**Outcomes**

| Well-being | Utilization | Cost |
|---|---|---|
| **X** | **X** | **X** |

**Notes**

- "38 percent reduction in total costs." (McCarthy, 2015)
- "36 percent fewer readmissions." (McCarthy, 2015)
- "Short-term improvements in overall quality of life and patient satisfaction." (McCarthy, 2015)

SOURCE: McCarthy, 2015.

## PACIFIC BUSINESS GROUP ON HEALTH'S INTENSIVE OUTPATIENT CARE PROGRAM

| **Target population** | **Matched Segment** |
|---|---|
| Individuals having two or more chronic conditions and behavioral and psychosocial needs that are not being met by the current health care system. (Mangiante, 2015) | Not used in matching exercise |

**Intervention Components**

- This high-touch, care-coordinated, patient-involved program uses team-based care with both licensed and unlicensed care coordinators to ensure seamless transitions and links to needed services. (Mangiante, 2015)
- Individuals in 23 participating delivery systems and 500 practices are identified using a predictive risk model plus cognitive assessment, as well as through physician referrals. (Mangiante, 2015)
- Interdisciplinary care teams developed longitudinal relationships with clients and provide warm handoffs to support services outside of the health care system. (Stremikis, 2016)
- Care coordinators complete a face-to-face "supervisit" within 1 month of a member's enrollment in the program. Because medically complex patients can be anxious and depressed, coordinators are particularly attentive to their patients' social and psychological needs, providing or supplying referrals for behavioral, psychosocial, and community services. (Mangiante, 2015)
- Coordinators proactively provide patients with tools for effective self-management, helping them to develop action plans and to recognize signs of exacerbations of illness, and engage in two-way communication with members at least once per month, with intensity decreasing as patients become stable. (Mangiante, 2015)

**Outcomes**

| Well-being | Utilization | Cost |
|---|---|---|
| **X** | **X** | **X** |

**Notes**

- Being tested in Pioneer and Medicare Shared Savings Program accountable care organizations as well as Medicare Advantage plans. (Mangiante, 2015)
- After CMS grant ended, "90 percent of participating delivery systems continued the core elements of the program for Medicare patients and 15 of the 23 expanded programs into their commercial populations." (Stremikis, 2016)
- 3.3 percent improvement in physical health functioning, 4.2 percent improvement in mental health functioning, and 31 percent improvement on depression score. Patient Activation Measure (PAM) scores increased in 37 percent of participants, and 30 percent increase in graduation from program among participants with increased PAM scores. (Mangiante, 2015)

SOURCES: Mangiante, 2015; Stremikis et al., 2016

## PARTNERS HEALTHCARE INTEGRATED CARE MANAGEMENT PROGRAM

| **Target population** | **Matched Segment** |
|---|---|
| “Medicare beneficiaries who are high cost and/or have complex conditions” (McCarthy, 2015) (also expanded to children) (Partners Healthcare, 2016). | Major complex chronic<br>Children w/ complex needs |

**Intervention Components**

- “Care managers are integrated into primary care practices.” (McCarthy, 2015)
- “Care managers provide patient education and address both medical and psychosocial needs.” (McCarthy, 2015)
- “Focus on preventing exacerbations that lead to emergency department visits and inpatient admissions.” (McCarthy, 2015)
- “Case managers also support end-of-life decision making.” (McCarthy, 2015)

**Outcomes**

| Well-being | Utilization | Cost |
|---|---|---|
| | X | X |

**Notes**

- “7 percent annual savings after accounting for intervention costs.” (McCarthy, 2015)
- “20 percent reduction in hospital admissions.” (McCarthy, 2015)
- “13 percent reduction in emergency department visits.” (McCarthy, 2015)

SOURCES: McCarthy, 2015; Partners Healthcare, 2016

## PROGRAM OF ALL-INCLUSIVE CARE FOR THE ELDERLY (PACE) PROGRAM

| **Target population** | **Matched Segment** |
|---|---|
| Frail elderly, dual-eligible individuals, functional and/or cognitive impairments. | Frail elderly |

**Intervention Components**

- “Each PACE site provides comprehensive preventive, primary, acute, and long-term care and social services, including adult day care, meals, and transportation.” (McCarthy, 2015)
- “Interdisciplinary team meets regularly to design individualized care plans.” (McCarthy, 2015)
- “Goal is to allow patients to live independently in the community.” (McCarthy, 2015)
- “Patients receive all covered Medicare and Medicaid services through the local PACE organization in their home and community and at a local PACE center, thereby enhancing care coordination.” (McCarthy, 2015)
- “Clinical staff are employed or contracted by the local PACE organization, which is paid on a per-capita basis and not based on volume of services provided.” (McCarthy, 2015)

**Outcomes**

| Well-being | Utilization | Cost |
|---|---|---|
| X | X | X |

**Notes**

- “Fewer hospitalizations but more nursing home admissions.” (McCarthy, 2015)
- “Better quality for certain aspects of care such as pain management, and lower mortality, than comparison groups.” (McCarthy, 2015)
- “Cost-neutral to Medicare; may have increased costs for Medicaid—more research is needed.” (McCarthy, 2015)

SOURCE: McCarthy, 2015

## STANFORD COORDINATED CARE

| **Target population** | **Matched Segment** |
|---|---|
| Top 20 percent of Stanford's employees and dependents with complex medical needs, who have two or more emergency room visits related to underlying medical conditions over the past year, and poor adherence to treatment recommendations. (Glaseroff, 2015) | Not used in matching exercise |

**Intervention Components**

- "Upon joining the program, SCC patients are assigned to care teams and complete a comprehensive intake process that focuses on the question, 'Where do you want to be in a year?'" (CHCS, 2015)
- "Care teams include a physician, registered nurse or other provider, and a care coordinator/medical assistant trained to act as a coach and navigator, as well as a social worker who specializes in trauma informed care, a physical therapist who specializes in chronic pain, and a clinical pharmacist." (CHCS, 2015)
- Care coordinators/medical assistants perform routine preventive services and chronic disease monitoring between clinic visits for a panel of 100 patients with the goal of encouraging patients to follow through on their action plans. (AHRQ, 2016)
- The care team focuses on improving each patient's self-management by supporting the patient's self-identified goals and assisting the patient to develop achievable action plans scaled according to the patient's PAM score. (CHCS, 2015)

**Outcomes**

| Well-being | Utilization | Cost |
|---|---|---|
| **X** | **X** | **X** |

**Notes**

- Surveys show staff and patient satisfaction ratings in the 99th percentile. Care coordinators working under protocol and informed by a care gap dashboard are effective at ensuring routine monitoring for prevention and chronic disease management. (AHRQ, 2016)
- PAM scores increased in 34 percent of participants, with a net improvement of 23 percent. Mental composite score increased in 50 percent of participants and physical composite score increased in 64 percent of participants. (Glaseroff, 2015)
- Care coordinators working under protocol and informed by a care gap dashboard are effective at ensuring routine monitoring for prevention and chronic disease management. (Glaseroff, 2015)

SOURCES: AHRQ, 2016; Center for Health Care Strategies, 2015; Glaseroff, 2015

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# APPENDIX B

## WORKSHOP AGENDAS

NATIONAL ACADEMY OF MEDICINE

### MODELS OF CARE FOR HIGH-NEED PATIENTS

*A National Academy of Medicine Workshop*

. . . funded by the Peterson Center on Healthcare

July 7, 2015
Keck Center
Room 100
500 Fifth St, NW
Washington DC 20001

NAM Leadership Consortium for Value & Science-Driven Health Care

*Meeting objectives*

1. What are the key characteristics of high-need patient populations, and which subgroups offer the greatest opportunity for impact?
2. What factors are most important in determining the match between a model of care and a patient population?
3. How can lessons learned from past experience with high-need patients be amplified and spread effectively?

# AGENDA

### 8:00 AM Coffee and light breakfast available

### 8:30 AM Welcome and agenda overview

- *Michael McGinnis, MD, MPP*, National Academy of Medicine
- *Peter Long, PhD*, Blue Shield of California Foundation (*Chair*)

### 8:45 AM Partner organizations: introduction and updates

- E*mily Zyborowicz, MPH*, Peterson Center on Healthcare
- *G. William Hoagland*, Bipartisan Policy Center
- *Katherine Hayes, JD*, Bipartisan Policy Center
- *Jose Figueroa, MD, MPH*, Harvard T.H. Chan School of Public Health

### 9:15 AM Patient perspective

*Brief opening presentation and discussion on the personal perspectives of a patient.*

- *Jeromie Ballreich*, Johns Hopkins University

### 9:30 AM High-need patients: introduction and overview

*Presentations and discussion on the existing high-need patient literature, including definitions, categories, challenges, and other considerations. [Meeting Goal: What are the key characteristics of high-need patient populations?]*

- *Melinda Abrams, MS*, The Commonwealth Fund
- *Alan Glaseroff, MD*, Stanford University

### 10:30 AM Break (15 min)

### 10:45 AM Identifying and defining high-need patients

*Presentations and discussion exploring special considerations for key subgroups and mechanisms for identifying opportunities for improving quality and controlling costs. [Meeting Goal: Which subgroups offer the greatest opportunity for impact?]*

- *David Meyers, MD*, Agency for Healthcare Research and Quality (moderator)
- *Bruce A. Chernof, MD, FACP*, The SCAN Foundation
- *Frank V. deGruy III, MD, MSFM*, University of Colorado, Denver
- *Lisa Iezzoni, MD, MSc*, Harvard Medical School
- *David Meltzer, MD, PhD*, University of Chicago

## 12:15 PM Meeting goal 1: closing discussion

## 12:30 PM Lunch

## 1:30 PM Models that deliver: success stories

*Case studies of successful interventions and care models that engage the priorities of high-need groups. [Meeting Goal: What factors are most important in determining the match between a model of care and a patient population?]*

- *Arnold Milstein, MD, MPH*, Stanford University (moderator)
- *John O'Brien, PharmD, MPH,* CareFirst BlueCross BlueShield
- *Robert Master, MD*, Commonwealth Care Alliance
- *Bonnie LaPlante, RN, MHA*, Health Care Homes, Minnesota
- *Rebecca Ramsay, MPH*, CareOregon

## 3:00 PM Break

## 3:15 PM Comments from the NAM president

- *Victor J. Dzau, MD*, National Academy of Medicine

## 3:20 PM Applying models of care to diverse circumstances

*Presentations and discussion on the challenges that arise in the application and spread of models of care in diverse settings and for diverse patient groups. [Meeting Goal: How can lessons learned from past experience with high-need patients be amplified and spread effectively?]*

- *Gerard Anderson, PhD*, Johns Hopkins Bloomberg School of Public Health (moderator)
- *Rajesh Davda, MD*, Cigna Healthcare
- *Don Furman, MD*, Alignment Healthcare

- *Lisa Mangiante, MPP, MPH*, Pacific Business Group on Health
- *Deborah Peikes, PhD, MPA*, Mathematica Policy Research

**4:45 PM Summary and next steps**

- *Peter Long, PhD*, Blue Shield of California Foundation (Chair)
- *Michael McGinnis, MD, MPP*, National Academy of Medicine

**5:00 PM Adjourn**

## PLANNING COMMITTEE

### Chair

**Peter Long, PhD**, Blue Shield of California Foundation

### Members

**Melinda Abrams, MS**, The Commonwealth Fund
**Gerard Anderson, PhD**, Johns Hopkins Bloomberg School of Public Health
**Tim Engelhardt**, Centers for Medicare & Medicaid Services
**Katherine Hayes, JD**, Bipartisan Policy Center
**Aparna Higgins, PhD, MA**, America's Health Insurance Plans
**Frederick Isasi, JD, MPH**, National Governors Association
**Ashish K. Jha, MD, MPH**, Harvard School of Public Health
**David Meyers, MD**, Agency for Healthcare Research and Quality
**Arnold S. Milstein, MD, MPH**, Stanford University

NATIONAL ACADEMY OF MEDICINE

# MODELS OF CARE FOR HIGH-NEED PATIENTS

*A National Academy of Medicine Workshop*

. . . funded by the Peterson Center on Healthcare

January 19, 2016
National Academy of Sciences Building
Lecture Room
2101 Constitution Avenue, NW
Washington, DC 20418

NAM Leadership Consortium for Value & Science-Driven Health Care

*Meeting objectives*

1. **Data and segmentation**. Review existing data sources on care delivery to high-need patients, and consider how the populations may be best characterized to design and target care more effectively.
2. **Design elements**. Explore successes and lessons learned from designing various models of care.
3. **Policy implications**. Consider policies particularly important to spreading the most successful models.

## 8:00 AM Coffee and light breakfast available

## 8:30 AM Welcome and agenda overview

- *Michael McGinnis, MD, MPP*, National Academy of Medicine
- *Jeff Selberg, MHA*, Peterson Center on Health Care
- *Peter Long, PhD*, Blue Shield of California Foundation (Chair)

## 8:45 AM Patient perspective

- *Darcel Jackson*, Children's National Health System

## 9:00 AM Framing the conversation: utility of a segmentation strategy for high-need patients and implications for care and policy

*Perspectives on the issues and uses of different approaches to segmenting high-need patient populations, and the implications for care delivery and policy.*

- *David Dorr, MD, MS*, Oregon Health & Science University
- *Craig Samitt, MD*, Anthem, Inc.
- *Simon Hambidge, MD, PhD*, Denver Health

## 9:30 AM The existing data on high-need patients

*Primary data sources and insights gleaned about the nature and care for high-need patients, including identification of the limits and opportunities of working with these data.*

- *Gerard Anderson, PhD*, Johns Hopkins University
- *Ashish Jha, MD, MPH*, Harvard T.H. Chan School of Public Health
- *Paul Bleicher, MD, PhD*, Optum Labs

Q&A and Open Discussion

## 10:30 AM Break

## 10:45 AM Understanding the taxonomy of high-need patient populations

*Synthesis of what we know about segmenting high-need patient populations, and the activities underway to build the taxonomy.*

- *Melinda Abrams, MS*, The Commonwealth Fund

Q&A and Open Discussion

## 11:30 AM Breakout sessions: interacting with the data and segmentation

*Two small-groups discuss: 1) the use of a segmentation strategy for high-need patients; 2) challenges and opportunities in use of different approaches and data sources for segmenting patients; and 3) implications of groupings for design, organization, and financing of care delivery.*

### 12:30 PM Working lunch and report back from breakout sessions

### 1:30 PM Identifying the design elements of successful models

*Panelists explore attributes of successful models.*

- *Molly Coye, MD, MPH*, Network for Excellence in Health Innovation
- *Randall Brown, PhD*, Mathematica Policy Research
- *Rahul Rajkumar, MD, JD*, Center for Medicare & Medicaid Innovation

Q&A and Open Discussion

### 2:30 PM Replicating successful models through spread and scale

*Panelists introduce policy strategies and opportunities to improve care for high-need patients.*

- *Arnold Milstein, MD, MPH*, Stanford University
- *Katherine Hayes, JD*, Bipartisan Policy Center
- *Sandra Wilkniss, PhD*, National Governors Association

Q&A and Open Discussion

### 3:10 PM Break

### 3:20 PM Breakout sessions: policy implications

*Two small-groups: 1) discuss key barriers to scaling new delivery models for high-need patients; and 2) identify essential elements for a policy framework that would mitigate these barriers.*

### 4:20 PM Report back

*A facilitated large group discussion reviews outcomes and takeaways from the breakout.*

### 4:45 PM Summary and next steps

- *Peter Long, PhD*, Blue Shield of California Foundation (Chair)
- *Michael McGinnis, MD, MPP*, National Academy of Medicine

### 5:00 PM Adjourn

## PLANNING COMMITTEE

### Chair

**Peter Long, PhD**, Blue Shield of California Foundation

### Members

**Melinda Abrams, MS**, The Commonwealth Fund
**Gerard Anderson, PhD**, Johns Hopkins Bloomberg School of Public Health
**Tim Engelhardt**, Centers for Medicare & Medicaid Services
**Katherine Hayes, JD**, Bipartisan Policy Center
**Aparna Higgins, PhD, MA**, America's Health Insurance Plans
**Frederick Isasi, JD, MPH**, National Governors Association
**Ashish K. Jha, MD, MPH**, Harvard School of Public Health
**David Meyers, MD**, Agency for Healthcare Research and Quality
**Arnold S. Milstein, MD, MPH**, Stanford University

NATIONAL ACADEMY OF MEDICINE

# MODELS OF CARE FOR HIGH-NEED PATIENTS

*A National Academy of Medicine Workshop*

. . . funded by the Peterson Center on Healthcare

October 21, 2016
Keck Center
Room 100
500 Fifth St, NW
Washington, DC 20001

NAM Leadership Consortium for Value & Science-Driven Health Care

*Meeting objectives*

1. **Examine tools to improve care delivery for high-need patients**. Discuss a patient "taxonomy" matched to care models with the most potential to improve outcomes and lower costs, and the use of measures to enhance care delivery.
2. **Advance policy to support better care for high-need patients**. Consider a policy-level approach and other insights to support and accelerate the spread and scale of effective care models.
3. **Synthesize and identify future opportunities**. Provide a synthesis of the three-part workshop series and identify approaches and priorities for advancing progress.

## 8:00 AM Coffee and light breakfast available

## 8:30 AM Welcome and agenda overview

- *Michael McGinnis*, National Academy of Medicine
- *Jeff Selberg*, Peterson Center on Healthcare
- *Peter Long*, Blue Shield of California Foundation (*Chair*)

## 9:00 AM Patient perspective: A caregiver and clinical team example

- *Eric De Jonge*, MedStar Total Elder Care
- *Veronica Humes Butler*, Long-time Caregiver
- *Gretchen Nordstrom*, MedStar Total Elder Care

## 9:30 AM A patient taxonomy and promising care models

*This session will examine a taxonomy of high-need patients matched to care models with the most potential to improve outcomes and lower the total cost of care for high-need patients.*

- *Melinda Abrams*, The Commonwealth Fund, Planning Committee Member
- *Arnie Milstein*, Stanford University, Planning Committee Member

Q&A and Open Discussion

## 10:45 AM Break

## 10:55 AM Policy opportunities for spread and scale of care models

Introductory comments:
- *David Blumenthal*, The Commonwealth Fund

The planning committee offers insight on opportunities to advance policy.
- *Gerard Anderson*, Johns Hopkins School of Public Health, Planning Committee Member

Bipartisan Policy Center policy framework for implementation of effective care models for high-need patients, particularly Medicaid and Medicare eligible.
- *Katherine Hayes*, Bipartisan Policy Center, Planning Committee Member

Reactor panel:
- *Julian Harris*, Care Allies
- *Melanie Bella*, Formerly CMS and Independent Consultant
- *Carolyn Ingram*, Molina

Q&A and Open Discussion

## 12:30 PM Lunch

## 1:00 PM The use of measures in payment to enhance care

*Experts discuss the use of measures in health care payment, and their role in enhancing and incentivizing high-value care for high-need patients.*

- *Helen Burstin*, National Quality Forum
- *Shari Ling*, Centers for Medicare and Medicaid Services
- *Rick Kronick*, University of California San Diego

Q&A and Open Discussion

## 2:15 PM Synthesis

*A synthesis of suggestions and insight gleaned to date from the three-part workshop series.*

- *Ashish Jha*, Harvard School of Public Health, Planning Committee Member
- *Peter Long*, Blue Shield of California Foundation, Planning Committee Chair

## 3:00 PM Counsel on moving the field forward

*A tightly moderated discussion of priorities for stakeholder action to improve care for high-need patients.*

Moderator: *David Meyers, AHRQ*, Planning Committee Member

Reactor insight:
- Payer: *Aelaf Worku*, CareMore
- System representative: *Dave Chokshi*, NYC Health + Hospitals

- Patient: *MaryAnne Sterling*, Sterling Health IT Consulting and Connected Health Resources
- Physician researcher: *David Dorr*, Oregon Health and Science University

### 4:15 PM Closing remarks

- *Michael McGinnis*, National Academy of Medicine
- *Peter Long*, Blue Shield of California Foundation (Chair)

### 4:30 PM Adjourn

## PLANNING COMMITTEE

### Chair

**Peter Long, PhD**, Blue Shield of California Foundation

### Members

**Melinda Abrams, MS**, The Commonwealth Fund
**Gerard Anderson, PhD**, Johns Hopkins Bloomberg School of Public Health
**Tim Engelhardt**, Centers for Medicare & Medicaid Services
**Jose Figueroa, MD**, Harvard School of Public Health
**Katherine Hayes, JD**, Bipartisan Policy Center
**Frederick Isasi, JD, MPH**, National Governors Association
**Ashish K. Jha, MD, MPH**, Harvard School of Public Health
**David Meyers, MD**, Agency for Healthcare Research and Quality
**Arnold S. Milstein, MD, MPH**, Stanford University
**Diane Stewart, MBA**, Pacific Business Group on Health
**Sandra Wilkniss, PhD**, National Governors Association

# APPENDIX C

## WORKSHOP PARTICIPANTS*

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Association for Community Affiliated Plans

**Chiledum Ahaghotu, MD**
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Howard University Health Sciences

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Vice President of Policy and Communications
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Patient-Centered Outcomes Research Institute

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Acting Chief Research and Development Officer
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**Jeromie Ballreich, MHS**
PhD candidate for Health Economics
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**Jessica Bartell**
Physician
Epic

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*Position at the time of attendance.

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**Leah Binder, MA, MGA**
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The Leapfrog Group

**Laura Birchfield Kennedy**
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**Paul Bleicher, MD, PhD**
Chief Executive Officer
Optum Labs

**David Blumenthal, MD**
President
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**Peter Boling, MD**
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# APPENDIX D

## BIOGRAPHICAL SKETCHES

### *Planning Committee Biographies*

**Peter V. Long, PhD** (*Chair*), is president and CEO of Blue Shield of California Foundation, a health foundation established in 2002 to ensure access to quality, affordable care for all Californians, and to end domestic violence. Dr. Long has an extensive background in health policy, working on issues affecting underserved communities at the state, national, and global levels. Previously, Dr. Long served in leadership roles at the Henry J. Kaiser Family Foundation and The California Endowment. He received a BA from Harvard University; an MS in health policy from The Johns Hopkins University School of Hygiene and Public Health; and a PhD in health services from the University of California, Los Angeles.

**Melinda K. Abrams, MS,** is a vice president for The Commonwealth Fund's Health Care Delivery System Reform program. Since coming to the fund in 1997, Ms. Abrams has worked on the fund's Task Force on Academic Health Centers, the Child Development and Preventive Care program, and, most recently, she led the Patient-Centered Primary Care Program. Ms. Abrams has served on many national committees and boards for private organizations and federal agencies and is a peer-reviewer for several journals. Ms. Abrams holds a BA in history from Cornell University and an MS in health policy and management from the Harvard School of Public Health.

**Gerard F. Anderson, PhD,** is a professor of health policy and management and director of the Johns Hopkins Bloomberg School of Public Health's Center for Hospital Finance and Management. Prior to coming to Johns Hopkins in 1983, Dr. Anderson worked in the Office of the Secretary of the US Department of Health and Human Services from 1978 to 1983. Dr. Anderson is currently conducting research on chronic conditions, comparative insurance systems, medical education, health care payment reform, and technology diffusion. He has directed reviews of health care systems for the World Bank, World Health Organization, and USAID in multiple countries and has directed more than 100 research projects. He has authored two books on health care payment policy, published more than 250 peer-reviewed articles, testified in Congress 50 times, and serves on multiple editorial committees.

**Tim Engelhardt, MHS,** is the director of the CMS Medicare-Medicaid's Federal Coordinated Health Care Office. The office was created in the Affordable Care Act to improve services for individuals dually eligible for Medicaid and Medicare. Prior to joining CMS in 2010, Mr. Engelhardt was a consultant with The Lewin Group, where he supported a variety of health and long-term care initiatives for federal, state, and local government agencies. He previously served as the deputy director for long-term care financing at the Maryland Department of Health and Mental Hygiene (the state Medicaid agency). Mr. Engelhardt received a BA in sociology from the University of Notre Dame and an MHS from the Johns Hopkins Bloomberg School of Public Health.

**Jose Figueroa, MD, MPH,** is an instructor of medicine at Harvard Medical School and an associate physician at Brigham and Women's Hospital (BWH). He is also currently a research fellow at the Harvard Initiative for Global Health Quality (HIGH-Q) and the Harvard Global Health Institute (HGHI). He graduated from Harvard Medical School and the Harvard School of Public Health in 2011 with a concentration in health policy. He completed his residency in internal medicine at Brigham and Women's Hospital in July 2014, where he now serves as faculty director of the BWH Residency Management & Leadership Track. He has previously worked for the Disparities Solutions Center at the Massachusetts General Hospital (MGH), Best Doctors Inc., and the GAVI Alliance in Geneva, Switzerland. Currently, his main research interests include (1) understanding the needs of high-cost, high need patients; (2) improving quality of care for vulnerable populations, including racial/ethnic minorities; and (3) understanding the impact of federal and state regulation on health care quality and costs.

**Katherine Hayes, JD,** is the director of health policy at the Bipartisan Policy Center (BPC). Prior to joining the BPC, Ms. Hayes worked as an associate research professor in the Department of Health Policy at the George Washington University School of Public Health and Health Services and served as codirector of Health Reform GPS: Navigating Health Reform Implementation, a website jointly sponsored by the Robert Wood Johnson Foundation and GW's Hirsh Health Law and Policy Program. She also taught graduate courses in federal advocacy and policy making and the federal budget process. Prior to joining GW, Hayes served as vice president of health policy for Jennings Policy Strategies, Inc. Other private-sector experience includes legal practice as a member of the health and legislative practice groups at Hogan & Hartson, LLP (now Hogan Lovells); policy director for two large Catholic health systems; and policy director for Cardinal Glennon Children's Hospital. Her government experience includes serving as legislative counsel to Senator Evan Bayh (D-IN); legislative assistant to Senator John H. Chafee (R-RI) and Congressman Mickey Leland (D-TX); and as a program consultant for the State of Missouri Medicaid agency. Ms. Hayes also worked as a health and education policy adviser for the State of Texas, Office of State-Federal Relations. She received a BA in international studies from the University of North Carolina at Chapel Hill and a JD from The American University Washington College of Law.

**Frederick Isasi, JD, MPH,** is the current executive director of Families USA. He previously served as the health division director with the National Governors Association Center for Best Practices (NGA Center). In that role, he oversaw the entire Health Division portfolio, including work related to: health care service delivery and payment reform; Medicaid reform and cost containment; state employee and retiree health benefits; maternal and child health; public health; prescription drug abuse prevention; health information exchange and analytics; behavioral health and the social determinants of health; and health insurance coverage issues such as insurance market reforms and health insurance exchange planning and operations. Previously, he served as the vice president of health policy at The Advisory Board Company, where he founded the health policy division focused on surfacing insights related to transforming the quality and efficiency of health care with a particular focus on risk-based payments, accountable care, population health, patient engagement, and payment bundling. Mr. Isasi also served for 5 years as the senior legislative counsel for health care to Senator Jeff Bingaman, working on both the Finance Committee and the Health Education Labor and Pension (HELP) Committee. During his time in the Senate, Mr. Isasi authored numerous health care laws related to Medicare, Medicaid, the State Children's Health Insurance Program (SCHIP), payment transformation and accountable care, quality, health information technology, health care workforce, oral health care, public health, and the Food and Drug Administration. He also worked extensively on the Affordable Care Act, including the development of new health insurance exchanges and insurance market reforms. Mr. Isasi graduated with a JD from Duke University Law School and received an MPH from the University of North Carolina at Chapel Hill with honors. He also has published research on the adherence of HIV-positive patients to antiretroviral treatments and has extensive biomedical research experience.

**Ashish K. Jha, MD, MPH,** is director of the Harvard Global Health Institute, and K.T. Li Professor of International Health & Health Policy, at the Harvard T.H. Chan School of Public Health, professor of medicine at Harvard Medical School, and a practicing internal medicine physician at the VA Boston Healthcare System. Dr. Jha received his MD from Harvard Medical School and trained in internal medicine at the University of California, San Francisco, where he also served as chief medical resident. He completed his general medicine fellowship from Brigham and Women's Hospital and Harvard Medical School and received his MPH from Harvard T.H. Chan School of Public Health. Dr. Jha's major research interests lie in improving the quality and costs of health care with a specific focus on the impact of policy efforts. His work has focused on a broad set of issues, including transparency and public reporting of provider performance, financial incentives, health information technology, and leadership, and the roles they play in fixing health care delivery systems.

**David Meyers, MD, FAAFP,** a board-certified family physician, serves as chief medical officer for the Agency for Healthcare Research and Quality (AHRQ). Prior to his appointment to this new position, he directed AHRQ's Center for Evidence and Practice Improvement, where he led AHRQ's Improving Primary Care initiative, oversaw the center's work supporting the US Preventive Services Task Force, the Agency's Evidence-based Practice Center initiative, Health IT portfolio, Decision Sciences group, and Practice Improvement Division. From 2011–2012 he also served as the Acting Scientific Director for the US Preventive Services Task Force. His recent publications have focused on primary care transformation, the evidence base for the patient-centered medical home, the primary care physician workforce, and foundational thinking about building capacity for ongoing and systematic quality improvement in primary care. Before joining AHRQ in 2004, Dr. Meyers practiced family medicine, including maternity care, in a community health center in southeast Washington, DC, and directed the Georgetown University Department of Family Medicine's practice-based research network, CAPRICORN. He is a graduate of the University of Pennsylvania School of Medicine and completed his family medicine residency at Providence Hospital/Georgetown University. After residency, he completed fellowship training in primary care health policy and research in the Department of Family Medicine at Georgetown University.

**Arnold S. Milstein, MD, MPH,** is professor of medicine and the director of the Clinical Excellence Research Center (CERC), which is housed in the Center for Advanced Study in the Behavioral Sciences at Stanford University. CERC designs and demonstrates, in multistate locations, scalable health care delivery innovations that provide better care with less health care spending. His research spans positive value outlier assessment, human-centered health care design, and, in partnership with Stanford's AI Lab, the development of technology-based cognitive aids to boost the yield from health care spending. Before joining Stanford's faculty, Dr. Milstein founded a national health care performance-improvement firm that he expanded globally after its acquisition by Mercer. He subsequently cofounded three nationally influential public benefit initiatives, including the Leapfrog Group and the Pacific Business Group on Health. As a congressional MedPAC commissioner, he originated two legislative changes to align health care provider revenue with value to patients. Dr. Milstein was elected to the National Academy of Medicine and cochaired its analysis of opportunities to safely slow national health spending growth.

**Diane Stewart, MBA,** joined the Pacific Business Group on Health in January 2001. She serves as the senior director for the Redesigning Care portfolio for PBGH. Ms. Stewart created PBGH's health care improvement initiative, California Quality Collaborative, a statewide collaborative program to reengineer care in the outpatient setting in partnership with commercial health plans, medical groups, and employers. She serves as the lead for PBGH's CMMI Innovation Award for changing care for high-risk patients, the Intensive Outpatient Care Program, and a CMS-funded Practice Transformation Network program. She also leads the Better Maternity Care program, which applies a combination of payment reform and QI to reduce C-Section rates. Ms. Stewart was a founding member, and now a board member, for the Network for Regional Health Improvement, a national organization of multistakeholder regional health initiatives to promote transparency and system improvement across local health care systems. Previously, she led the technical development team for the Integrated Healthcare Association's (IHA) Pay for Performance program, which collects and reports measures of clinical performance, patient experience, and IT functionality for 215 medical groups caring for 6 million patients. Prior to joining PBGH, Ms. Stewart was director of quality and planning at the Palo Alto Medical Foundation, where she initiated the quality program driving improved outcomes in patient satisfaction, clinical performance, financial performance, and staff satisfaction. She has also held management positions at Harvard Community Health Plan as well as other IPAs and medical groups on the East Coast. Ms. Stewart received a BS in biology from Dartmouth College and an MBA from the Yale School of Management.

**Sandra Wilkniss, PhD,** serves as program director for the National Governors Association (NGA) Center for Best Practices' Health Division. Dr. Wilkniss focuses on issues related to behavioral health and social determinants of health and the innovative integration of these into health system transformation efforts. She leads the NGA Center's technical assistance work with states advancing programs for high-need, high-cost populations. Prior to joining NGA, Dr. Wilkniss worked for 3 years in the US Senate as senior legislative assistant for health care to Senators Jeff Bingaman and Martin Heinrich. She joined Senator Bingaman's staff after serving 1 year as an American Association for the Advancement of Science/American Psychological Association Congressional Fellow in his office. Before her career transition to the health policy field, Dr. Wilkniss worked for 15 years as a scientist-practitioner in adult psychopathology, specializing in serious mental illness. She served as the director of Thresholds Institute at Thresholds Psychiatric Rehabilitation Centers, the research and training arm of the Chicagoland's largest psychiatric rehabilitation provider. She also served as adjunct assistant professor at Dartmouth Medical School, assistant clinical professor at the University of Illinois at Chicago, and the chief psychologist on the inpatient unit at the University of Illinois at Chicago hospital. Dr. Wilkniss completed her fellowship training at the Weill Medical College of Cornell University & New York Presbyterian Hospital/Payne Whitney Psychosis Clinic and her clinical internship at the San Francisco Veterans Affairs Medical Center. She holds a PhD in clinical psychology from the University of Virginia and a BA in psychology from Princeton University. Dr. Wilkniss also holds a certificate in nonprofit management from the Kellogg School of Management at Northwestern University. She is licensed to practice psychology in the State of Illinois. She received a Chicago Community Trust Emerging Nonprofit Leader Fellowship Award and the Carol T. Mowbray Early Career Research Award from the US Psychiatric Rehabilitation Association.

## *Taxonomy Workgroup Biographies*

**Melinda J. Beeuwkes Buntin, PhD,** is the chair of the Department of Health Policy at Vanderbilt University's School of Medicine. She previously served as deputy assistant director for health at the Congressional Budget Office (CBO), where she was responsible for managing and directing studies of health care and health care financing issues in the Health, Retirement, and Long-term Analysis Division. Prior to joining CBO, Dr. Buntin worked at the Office of the National

Coordinator for Health IT, where she established and directed the economic analysis, evaluation, and modeling group while on leave from RAND. At RAND, Dr. Buntin served as deputy director of RAND Health's Economics, Financing, and Organization Program, director of Public Sector Initiatives for RAND Health, and codirector of the Bing Center for Health Economics. Her research at RAND focused on insurance benefit design, health insurance markets, provider payment, and the care use and needs of the elderly. She has an AB from the Woodrow Wilson School at Princeton and a PhD in health policy with a concentration in economics from Harvard University.

**Dave A. Chokshi, MD, MSc,** is an assistant vice president at the New York City Health and Hospitals Corporation—the largest public health care system in the United States—where he leads the Office of Ambulatory Care Transformation. He practices primary care (internal medicine) at Bellevue Hospital and is an assistant professor of population health and medicine at NYU Langone Medical Center. Previously, Dr. Chokshi was director of population health improvement at NYU Langone. In 2012–2013, he served as a White House fellow at the US Department of Veterans Affairs, where he was the principal health adviser in the Office of the Secretary. His prior work experience spans the public, private, and nonprofit sectors, including positions with the New York City and State Departments of Health, the Louisiana Department of Health, a start-up clinical software company, and the nonprofit Universities Allied for Essential Medicines (UAEM), where he was a founding member of the board of directors. Dr. Chokshi has written on medicine and public health in *The New England Journal of Medicine, JAMA, The Lancet, Health Affairs*, and *Science*. He has also contributed to *The Atlantic* and *Scientific American*. He serves on the board of Advisors for the Parkland Health & Hospital System. In 2015, Dr. Chokshi was elected a fellow of the New York Academy of Medicine, and in 2016, he was elected a fellow of the American College of Physicians. He trained in internal medicine at Brigham and Women's Hospital, where he practiced primary care at the Southern Jamaica Plain Health Center, and he was a clinical fellow at Harvard Medical School. During his training, he did clinical work in Guatemala, Peru, Botswana, Ghana, and India. He received his MD with Alpha Omega Alpha distinction from Penn, an MSc in global public health as a Rhodes Scholar at Oxford, and graduated summa cum laude from Duke.

**Henry Claypool,** policy director, Community Living Policy Center, University of California, San Francisco, having sustained a spinal cord injury in a snow skiing accident in college, has spent his career advocating for the rights and needs of people living with disabilities. Most recently, he served as the executive vice president of The American Association of People with Disabilities. He was also the senior advisor to the Secretary of Health and Human Services where he was a principal architect of the administration's efforts to expand access to community living services, which culminated in the creation of the Administration for Community Living. He served as a commissioner on the 2013 Commission on Long-Term Care.

**David A. Dorr, MD, MS,** serves as professor and vice chair of medical informatics for the Department of Medical Informatics & Clinical Epidemiology as well as a professor of general internal medicine/geriatrics at Oregon Health & Science University. Broadly, Dr. Dorr's interests lie in care management, coordination of care, collaborative care, chronic disease management, quality, and the requirements of clinical information systems to improve and support these areas. His current primary concentrations are Transforming Outcomes for Patients through Medical home Evaluation & re-Design, or TOPMED (funded by The Gordon & Betty Moore Foundation), Risk Stratification in Primary Care (funded by The Commonwealth Fund and AHRQ), and further dissemination and evaluation of the Care Management Plus project (initially funded by The John A. Hartford Foundation). Dr. Dorr is interested in policy and payment reforms to help provide better-coordinated patient-centered care and support efficiency in the health care system. He was chosen as the New Investigator of the Year by the American Medical Informatics Association in 2007. Dorr earned his BA in economics and his MD from Washington University in St. Louis. He then completed internal medicine residency at Oregon Health & Science University, and earned an MA in medical informatics and health services administration from the University of Utah.

**David Labby, MD, PhD,** was the founding chief medical officer of Health Share of Oregon, a Coordinated Care Organization (CCO) that is financially and clinically accountable for the physical, behavioral, and dental care of 260,000 Medicaid enrollees in the tri-county region around Portland, Oregon. He was at Health Share from 2012, when CCOs were launched as the key element in the state's health care transformation efforts, until retiring in July 2015. He continues to work with Health Share as their health strategy adviser as well as consulting with other CCOs. Before coming to Health Share, Dr. Labby was medical director for CareOregon, the state's largest Medicaid Managed Care Plan. While at CareOregon, he was responsible for developing and overseeing the health plan's care management program for members with complex conditions.

Starting in 2006, he initiated and led the plan's Primary Care Renewal initiative to support key network providers in moving to a "medical home" model of care that includes integrated behavioral health. Dr Labby directed Health Share's "Health Commons" program, a 3-year federally funded Innovations Grant initiative focused on creating a regional system of care for high- needs/high- cost individuals. Dr. Labby is a general internist who practiced in primary care and was medical director in both primary care and multi-specialty settings before coming to CareOregon in 2000. He received his PhD in cultural anthropology.

**Prabhjot Singh, MD, PhD,** is director of the Arnhold Institute for Global Health at the Mount Sinai Health System. His work combines systems engineering and social mobilization principles, with an emphasis on how the US health care system can learn from other industries and low-resource settings to improve health and health care. He cofounded the One Million Community Health Workers Campaign, an initiative of the African Union and the UN Sustainable Development Solutions Network. This inspired the launch of City Health Works, a Harlem-based social enterprise that develops scalable health coaching services for high- need patients, of which he is the founding technical adviser. In 2016, his Arnhold Institute team, in partnership with the UN Secretary General Special Envoy's Office, planned to launch the Health Equity Atlas of Africa, an open framework to drive collaboration among data scientists, health system experts, and frontline health workers.

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# Models of Care for High-Need, High-Cost Patients: An Evidence Synthesis

Douglas McCarthy, Jamie Ryan, and Sarah Klein

**Abstract** This brief analyzes experts' reviews of evidence about care models designed to improve outcomes and reduce costs for patients with complex needs. It finds that successful models have several common attributes: targeting patients likely to benefit from the intervention; comprehensively assessing patients' risks and needs; relying on evidence-based care planning and patient monitoring; promoting patient and family engagement in self-care; coordinating care and communication among patients and providers; facilitating transitions from the hospital and referrals to community resources; and providing appropriate care in accordance with patients' preferences. Overall, the evidence of impact is modest and few of these models have been widely adopted in practice because of barriers, such as a lack of supportive financial incentives under fee-for-service reimbursement arrangements. Overcoming these challenges will be essential to achieving a higher-performing health care system for this patient population.

## INTRODUCTION

Patients who have complex health needs account for a disproportionate share of health care spending or may be at risk of incurring high spending in the near future.[1] These individuals typically suffer from multiple chronic health conditions and/or functional limitations.[2] Moreover, their health care needs may be exacerbated by unmet social needs.[3] They are often poorly served by current health care delivery and financing arrangements that fail to adequately coordinate care across different service providers and care settings.[4]

This brief describes research about clinical care models or care management programs implemented by health care provider organizations to improve outcomes and reduce costs for high-need, high-cost patients (see About the Study). Based on a review of literature that assesses the evidence on the impact and features of such care models or care management programs, this brief identifies common attributes of effective models and programs, as well as barriers to their uptake, to identify opportunities for improving health system performance. This literature synthesis is the first in a series of publications that will address this topic in more detail.

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## FINDINGS

### Assessing the Evidence on the Value of Care Models

In a review conducted for the Institute of Medicine, Chad Boult and his colleagues at Johns Hopkins University identified 15 models of comprehensive care for older adults with chronic illness, which fit into six broad categories related to care settings.[5] Exhibit 1 summarizes evidence of positive impact,[*] which was most frequently observed in quality of care or patient's quality of life. Most models reduced hospital use or length of stay, although the evidence was mixed in some cases. Three models—interdisciplinary primary care for heart failure patients, transitional care from hospital to home, and "hospital-at-home" programs that substitute care in the patient's home in lieu of a hospital stay—showed some evidence of lower cost, although this was not directly measured in all studies.

**Exhibit 1. Comprehensive Care Models: Typology and Evidence of Impact**

| Categories | Models or Examples* | Evidence of Positive Impact** | | | | | |
|---|---|---|---|---|---|---|---|
| | | QoC | QoL | FA | Surv | Use | Cost |
| 1. Interdisciplinary primary care | Guided Care, GRACE, IMPACT, PACE | X | X | X | X | X | M |
| 2. Enhancements to primary care | Care and case management | X | X | | | M | |
| | Disease management | | X | | | X | |
| | Preventive home visits | | | X | X | X | |
| | Geriatric evaluation and management | X | X | X | | M | |
| | Pharmaceutical care | X | | | | X | |
| | Chronic disease self-management | | X | X | | X | |
| | Proactive rehabilitation | | X | X | | | |
| | Caregiver education and support | | X | | | X | |
| 3. Transitional care | Hospital to home | | X | | | X | X |
| 4. Acute care in patients' homes | Substitutive hospital-at-home | | X | | | LOS | X |
| | Early-discharge hospital-at-home | | | | | X | |
| 5. Team care in nursing homes | Minnesota Senior Health Options, Evercare | X | | | | M | |
| 6. Comprehensive care in hospitals | Prevention/management of delirium | | X | | | LOS | |
| | Comprehensive inpatient care | | X | X | X | | |

* Examples: GRACE = Geriatric Resources for Assessment and Care of Elders; IMPACT = Improving Mood: Promoting Access to Collaborative Treatment; PACE = Program of All-Inclusive Care for the Elderly.
** Impact: QoC = quality of care; QoL = quality of life; FA = functional autonomy; Surv = survival; LOS = length of stay; M = mixed evidence.
Source: Adapted from C. Boult et al., *Journal of the American Geriatrics Society,* Dec. 2009 57(12):2328–37.

A review conducted for the Robert Wood Johnson Foundation by Thomas Bodenheimer and Rachel Berry-Millett, at the University of California, San Francisco, analyzed evidence on the effects of care management programs for patients with complex health care needs. They defined care management as "a set of activities designed to assist patients and their support systems in managing medical conditions and related psychosocial problems more effectively, with the aim of improving patients' health status and reducing the need for medical services."[6] The strength of the evidence varied by site or modality of care (Exhibit 2). Studies of hospital-to-home transitions for patients with complex

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[*] Note: For the purposes of Exhibit 1, we defined evidence of positive impact to mean a majority of identified studies or a meta-analysis of studies reported an improvement in an outcome that was assessed in more than one study of a model. Mixed evidence means there were both positive and negative findings.

conditions exhibited the most consistently positive findings. Several studies offered convincing evidence that care management improved quality in primary care settings, but hospital use was reduced in only a few studies.

### Exhibit 2. Summary of Evidence for Complex Care Management by Site and Modality of Care

| Site of Care Management | Impact on Quality | Impact on Hospital Use and/or Costs |
|---|---|---|
| Primary care | Improved (7 of 9 studies) | Some reduced use (3 of 8 studies) |
| Via telephone (vendor supported) | Some improvement | Inconclusive evidence |
| Integrated multispecialty group | Improved (2 of 3 studies) | Some reduced cost (1 of 3 studies) |
| Hospital-to-home transition | Improved (many studies) | Reduced use and cost (many studies) |
| Home-based | No clear evidence | No evidence |

* Note: Studies of home-based interventions reviewed by Bodenheimer and Berry-Millett differed from those reviewed by Boult and colleagues, who found positive impact for hospital-at-home interventions (Exhibit 1).
Source: Adapted from T. Bodenheimer and R. Berry-Millett, *Care Management of Patients with Complex Health Care Needs,* Research Synthesis Report No. 19 (Princeton, N.J.: Robert Wood Johnson Foundation, Dec. 2009).

A Congressional Budget Office report, authored by Lyle Nelson, reviewed evaluations of 34 disease management and care coordination programs for Medicare fee-for-service beneficiaries and found that only one-third reduced hospital use by 6 percent or more.[7] Although the programs were developed under six different demonstrations (Appendix A), they shared a common feature: the use of nurses as care managers “to educate patients about their chronic illnesses, encourage them to follow self-care regimens, monitor their health, and track whether they received recommended tests and treatments.”[8] The programs increased teaching about self-care, but had little effect on patients’ adherence to self-care and no systematic effects on care quality. Medicare realized net savings for only two programs: a care management program operated by Massachusetts General Hospital and its affiliated physicians and a telemedicine program operated by the Health Buddy Consortium (Appendix B).

Finally, Randall Brown at Mathematica Policy Research and colleagues[9] at the University of Illinois, Chicago, found the following types of care models had the strongest evidence for reducing hospital use and costs of care for high need, high cost patients: select interdisciplinary primary care models (e.g., Care Management Plus developed at Intermountain Healthcare and Oregon Health and Science University); care coordination programs focused on high-risk patients (e.g., the Medicare Care Coordination Demonstration program implemented at Washington University); chronic disease self-management programs (e.g., the model developed at Stanford University); and transitional care interventions (e.g., Naylor Transitional Care Model developed at the University of Pennsylvania). (For more information on the specific programs cited, see Appendix B; for an example of how the Medicare Care Coordination Demonstration program was implemented at one site, see the box on page 4.)

**CASE EXAMPLE: WASHINGTON UNIVERSITY'S CARE COORDINATION PROGRAM**

A natural experiment at Washington University, an academic medical center in St. Louis that participated in the Medicare Care Coordination Demonstration, illustrates the importance of program design. An evaluation found that the site had increased costs when relying on remote telephone care management of most of its enrollees during the first four years of participation in the demonstration. The site achieved net savings for Medicare after reconfiguring its program to focus on higher-risk patients through better assessment of health risks and more in-person contacts by local care managers, which in turn supported stronger transitional care. In addition, the supervised use of care manager assistants for patients at lower-risk levels helped nurse care managers focus greater attention on higher-risk patients. The redesign also improved comprehensive medication management and streamlined and standardized care planning, which promoted efficiency.

Source: D. Peikes, G. Peterson, R. S. Brown et al., "How Changes in Washington University's Medicare Coordinated Care Demonstration Pilot Ultimately Achieved Savings," *Health Affairs,* June 2012 31(6):1216–26.

## Identifying Common Attributes of Successful Care Models

Interdisciplinary primary care models have demonstrated a range of positive outcomes and are of particular interest because they may have broad potential application in current practice. Chad Boult and Darryl Wieland, at Johns Hopkins University, distilled four features associated with more effective and efficient primary care for older adults with chronic illnesses.[10] They are:

- comprehensive assessment of the patient's health conditions, treatments, behaviors, risks, supports, resources, values, and preferences;
- evidence-based care planning and monitoring to meet the patient's health-related needs and preferences;
- promotion of patients' and family caregivers' active engagement in care; and
- coordination and communication among all the professionals engaged in a patient's care, especially during transitions from the hospital.

Bodenheimer and Berry-Millett identified several characteristics of more successful care management programs:

- selecting patients with complex needs but not those with illness so severe that palliative or hospice care would be more appropriate than care management;
- using specially trained care managers on multidisciplinary teams that include physicians;
- emphasizing person-to-person encounters, including home visits;
- coaching patients and families to engage in self-care and recognize problems early to avoid emergency visits and hospitalizations; and
- relying on informal caregivers in the home to support patients.

Nelson's analysis of program design in the Medicare demonstrations found that the nature of interactions between care managers and patients and physicians was the strongest predictor of success in reducing hospital use. These interactions occurred in a variety of ways, such as by meeting patients in the hospital or occasionally accompanying patients on visits with their physician. In primary care practices affiliated with Massachusetts General Hospital, care managers were embedded in the practices so that they had access to patient information and worked closely with physicians.[11] When care-managed patients of these practices visited the emergency departments or were admitted to the hospitals, care teams received real-time notifications, which allowed them to intervene in a timely way.

An analysis of the Medicare Care Coordination Demonstration (one of the six Medicare demonstrations examined by Nelson) by Randall Brown and colleagues at Mathematica Policy Research found that four different programs were more successful than others in reducing hospital use (by 11% on average) among a subset of enrollees at high risk of near-term hospitalization (Appendix A). As a group, the four programs reduced Medicare spending by 5.7 percent for high-risk enrollees, although they were cost-neutral after accounting for administrative fees.[12] These findings point to the importance of targeting those most likely to benefit, rather than all patients, and keeping intervention costs low to generate savings. The evaluators identified six practices that care coordinators performed in at least three of the four more-successful programs targeting high-risk beneficiaries:

- supplementing telephone calls to patients with frequent in-person meetings;
- occasional in-person meetings with providers;
- acting as a communications hub for providers;
- educating patients;
- helping patients manage medications; and
- providing timely and comprehensive transitional care after hospitalizations.

Although transitional care is receiving attention for its role in reducing hospital readmissions, it is only one of several interventions needed to improve outcomes for high-need, high-cost patients. Successful transitional care consists of several interrelated elements,[13] which might be considered together as one feature in a broader care model.

## Implementing Care Models Successfully: Context Matters

Some interventions with seemingly similar features achieve disparate results.[14] Their relative success or failure may be attributed to how an intervention is executed, including social and technical aspects.[15] Organizations that develop care management programs are not necessarily seeking to design broadly applicable models but an approach that works in a specific setting. For example, evaluators found the success of high-cost care management at Massachusetts General Hospital stemmed from an institutional commitment to developing a program tailored and fully integrated into its health care system.[16]

To this point, a recent examination of 18 primary care-integrated complex care management programs by Hong and colleagues[17] identified common managerial and operational approaches:

- customizing the approach to the local context and caseload;
- using a combination of qualitative and quantitative methods to identify patients;
- focusing on building trusting relationships with patients and their primary care providers;
- matching team composition and interventions to patient needs;
- offering specialized training for team members;
- using technology to bolster care management efforts.

Best practices may need to be customized to accommodate different populations' needs and changes in technology. For example, a care manager's role of serving as a "communications hub" may evolve as digital health technologies facilitate new ways of engaging patients and convening a virtual care team.[18] Likewise, electronic teaching aids may help teach self-care to patients with low health literacy, while also lessening care managers' workloads.[19]

### Putting the Pieces Together: Content and Execution

Our synthesis of the common attributes of successful care models, identified across multiple reviews, distinguishes between features that describe the general content of an intervention (i.e., what it does) and those related to the execution of that content (i.e., how it's done) (Exhibit 3).

### Exhibit 3. Common Attributes of Successful Care Models

**Content/Features**

- **Targeting** individuals most likely to benefit from intervention
- **Comprehensive assessment** of patients' health-related risks and needs
- Evidence-based **care planning** and routine **patient monitoring**
- Promotion of patients' and family caregivers' **engagement in patient self-care**
- **Coordination** of care and communication among the patient and care team
- **Facilitation of transitions** from hospital to postacute care and referral to **community resources**
- Provision of **appropriate care** in accordance with patients' goals and priorities

**Execution/Methods**

- Effective **interdisciplinary teamwork** (e.g., defined roles and scope of work, trusting relationships, use of team meetings)
- Specially trained **care manager builds rapport through face-to-face contact** with patients and collaborative relationship with physicians
- Use of **coaching and behavior-change techniques** to teach self-care skills
- Use of **standardized processes** for medication management, advanced care planning
- **Effective use of health IT** to provide timely and reliable information on hospital use, enable care management, remote monitoring, analytics
- **Outcomes measurement** to evaluate and improve performance

Source: Authors' synthesis of key literature reviews (see Appendix A).

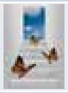
## IMPLICATIONS

### Overcoming Barriers to Sustainability and Spread

We identified five kinds of barriers or challenges to sustaining and spreading new care models (Exhibit 4), which help to explain why few of these models have been widely adopted in practice.[20]

Simply identifying barriers and enabling factors does not produce change. To advance the field, practitioners can use evidence-based implementation and dissemination frameworks, which have shown promise in helping to guide the adaptive design and spread of programs.[21] Packaging tools, training, and technical assistance together with supportive financial incentives may increase the likelihood that local champions can develop capacity to take up effective programs and practices.[22]

## Exhibit 4. Barriers to Sustainability and Spread of Successful Care Models

| Barrier | | Description |
|---|---|---|
| **Financial incentives** |  | Lack of incentives to provide care coordination and supportive services under fee-for-service payment; difficulty of prevailing against fee-for-service incentives to generate sufficient cost savings in an acceptable time frame |
| **Capacity to change** |  | Stresses on primary care and limited capacity to implement care management models, despite the logic of doing so in this setting |
| **Culture and workforce** |  | Professional uncertainty and lack of training and skills to take on new roles, adopt a patient-centered paradigm, and change the culture |
| **Infrastructure** |  | Inadequate electronic health records systems and interoperability to support integrated care management and coordination across the care continuum |
| **Evidence** |  | Difficulty scaling up limited evidence from single-site or single-condition studies to multiple contexts and chronic conditions (e.g., determining the relative importance and ideal intensity of each feature in the bundle, etc.) |

Source: Authors' synthesis of evidence reviews, case studies, and conference proceedings.

## Applying the Evidence to Design Effective Programs for Particular Subpopulations

Care models are typically designed to meet the needs of particular population segments under different payment arrangements and organizational settings (Exhibit 5).[23] For example, frail elderly patients with functional limitations who need long-term services and supports may benefit from a care model

## Exhibit 5. Context Matters: What Works by Population and Payment

| Population | Examples of models that work in managed care arrangements | Examples of models that work in fee-for-service arrangements |
|---|---|---|
| **Using long-term services and supports in the community** | • PACE (Program of All-Inclusive Care for the Elderly)<br>• Commonwealth Care Alliance (Mass. Senior Care Options) | • GRACE (Geriatric Resources for the Assessment and Care of Elders) |
| **With severe chronic illness, but no long-term services and supports** | • CareMore | • Select programs from the Medicare Care Coordination Demonstration, e.g., Health Quality Partners, Washington University<br>• Select programs from the Medicare Care Management for High-Cost Beneficiaries, e.g., Massachusetts General Hospital |
| **With less severe chronic illness** | | • Accountable care organizations (ACOs)* |

* Note: ACOs are shown as a current model that builds on evidence from the Physician Group Practice Demonstration; their potential has not yet been fully demonstrated.

Source: Adapted in part from R. Brown, "Care Coordination Programs for Improving Outcomes for High-Need Beneficiaries: What's the Evidence?" Presentation to the Commission on Long-Term Care, July 17, 2013.

such as the Program of All-Inclusive Care for the Elderly (PACE), which offers a comprehensive set of services to support independent living by pooling funding from the Medicare and Medicaid programs. On the other hand, Medicare beneficiaries with serious chronic illnesses who do not need such long-term services and supports may benefit from a care model such as the Washington University care coordination program, which builds on existing provider relationships and fee-for-service payment.

Assessing and monitoring high-risk patients can determine when their needs change and require an alternative care model. However, transitions between programs must be made seamlessly or will risk interrupting continuity of care. Some managed care organizations, such as the Visiting Nurse Service of New York, have developed a portfolio of programs based on common care management principles tailored to serve different segments of the population; this approach offers the opportunity to realize economies but also requires depth of expertise.[24]

Our synthesis is limited by a relative paucity of high-quality evidence on some care models, such as those that integrate long-term services and social supports into primary care. Much of the evidence reviewed comes from trials in single sites or programs that target patients with specific conditions, which raises questions about broader application. The findings of this brief will need to be augmented by new evidence from other approaches that are currently being tested.[25]

## CONCLUSION

Care models for high-need, high-cost patients offer the potential to achieve the “triple aim” by reducing costs while simultaneously improving patients’ health and care experiences. Few of the care models examined in this brief have demonstrated net cost savings, which suggests that our expectations should be modest when adding care management to an already fragmented fee-for-service care system. The incentives created by accountable care and other value-based purchasing initiatives may strengthen the business case for adopting carefully designed and well-executed models.[26] Public and private purchasers must consider the adequacy of payment methods and performance measurements to ensure that savings ultimately accrue to society or consumers while also attracting sufficient participation among providers and improving outcomes for patients.[27]

## ABOUT THIS STUDY

We synthesized findings from six expert reviews and secondary analyses of evidence on the impact and features of clinical care models or care management programs that target high-need, high-cost patients—often defined as patients with complex health care needs. (Appendix A describes sources and definitions in detail; Appendix B describes characteristics of select care models.)

- C. Boult and colleagues, "Successful Models of Comprehensive Care for Older Adults with Chronic Conditions: Evidence for the Institute of Medicine's 'Retooling for an Aging America' Report" (article published in the *Journal of the American Geriatrics Society* in 2009).
- T. Bodenheimer and R. Berry-Millett, *Care Management of Patients with Complex Health Care Needs* (report published by the Robert Wood Johnson Foundation in 2009).
- L. Nelson, "Lessons from Medicare's Demonstration Projects on Disease Management and Care Coordination" (working paper published by the Congressional Budget Office in 2012).
- R. S. Brown and colleagues, "Six Features of Medicare Coordinated Care Demonstration Programs that Cut Hospital Admissions of High-Risk Patients" (article published in *Health Affairs* in 2012).
- R. S. Brown and colleagues, "Promising Practices in Acute/Primary Care" (chapter in the book, *Comprehensive Care Coordination for Chronically III Adults,* published by Wiley in 2011).
- C. S. Hong and colleagues, *Caring for High-Need, High-Cost Patients: What Makes for a Successful Care Management Program?* (issue brief published by The Commonwealth Fund in 2014).

We also reviewed a best-practice framework for advanced illness care published by the Coalition to Transform Advanced Care. Although there was some overlap in the research studies included in the reviews, no single review encompassed all the evidence.

**Exclusions:** Our primary focus was on care models sponsored by health care delivery organizations. Therefore, we did not select reviews focused on the effectiveness of capitated managed care plans or state-sponsored programs for Medicaid beneficiaries.[28] (Some care models targeting these populations were included in the general reviews.) While care models often included behavioral health in comprehensive care, we did not include reviews focused specifically on interventions that integrate behavioral health in primary care, which may serve a broader population.[29]

**Limitations:** Individual research studies included in the reviews may not have been strictly comparable because of differences in intensity and scope of interventions, in populations served, and in duration of study periods. We did not ascertain whether the programs cited in the literature are still in existence. Many studies used reductions in hospitalizations to indicate the potential for reduced health care spending; however, this outcome depends on whether cost savings from reduced utilization exceed the costs of care enhancements and program administration, which was often not measured.

# NOTES

[1] J. A. Schoenman, *The Concentration of Health Care Spending,* NIHCM Foundation Data Brief (Washington, D.C.: National Institute for Health Care Management Research and Educational Foundation, July 2012).

[2] L. Alecxih, S. Shen, I. Chan et al., *Individuals Living in the Community with Chronic Conditions and Functional Limitations: A Closer Look* (Washington, D.C.: U.S. Department of Health and Human Services, Office of the Assistant Secretary for Planning and Evaluation, Jan. 2010).

[3] D. Bachrach, H. Pfister, K. Wallis et al., *Addressing Patients' Social Needs: An Emerging Business Case for Provider Investment* (New York: The Commonwealth Fund, May 2014).

[4] C. Schoen, R. Osborn, D. Squires, M. M. Doty, R. Pierson, and S. Applebaum, "New 2011 Survey of Patients with Complex Care Needs in Eleven Countries Finds That Care Is Often Poorly Coordinated," *Health Affairs* Web First, published online Nov. 9, 2011; and S. M. Asch, E. A. Kerr, J. Keesey et al., "Who Is at Greatest Risk for Receiving Poor-Quality Health Care?" *New England Journal of Medicine,* March 16, 2006 354(11):1147–56.

[5] C. Boult, A. F. Green, L. B. Boult et al., "Successful Models of Comprehensive Care for Older Adults with Chronic Conditions: Evidence for the Institute of Medicine's 'Retooling for an Aging America' Report," *Journal of the American Geriatrics Society,* Dec. 2009 57(12):2328–37.

[6] T. Bodenheimer and R. Berry-Millett, *Care Management of Patients with Complex Health Care Needs,* Research Synthesis Report No. 19 (Princeton, N.J.: Robert Wood Johnson Foundation, Dec. 2009).

[7] L. Nelson, *Lessons from Medicare's Demonstration Projects on Disease Management and Care Coordination,* Working Paper 2012-01 (Washington, D.C.: Congressional Budget Office, Jan. 2012).

[8] L. Nelson, *Lessons from Medicare's Demonstration Projects on Disease Management, Care Coordination, and Value-Based Payment,* Issue Brief (Washington, D.C.: Congressional Budget Office, Jan. 2012).

[9] R. S. Brown, A. Ghosh, C. Schraeder et al., "Promising Practices in Acute/Primary Care," In: C. Schraeder and P. Shelton, eds., *Comprehensive Care Coordination for Chronically Ill Adults* (New York: Wiley, 2011).

[10] C. Boult and G. D. Wieland, "Comprehensive Primary Care for Older Patients with Multiple Chronic Conditions," *Journal of the American Medical Association,* Nov. 3, 2010 304(17):1936–43.

[11] N. McCall, J. Cromwell, and C. Urato, *Evaluation of Medicare Care Management for High Cost Beneficiaries (CMHCB) Demonstration: Massachusetts General Hospital and Massachusetts General Physicians Organization, Final Report* (Washington, D.C.: Centers for Medicare and Medicaid Services, Sept. 2010).

[12] R. S. Brown, D. Peikes, G. Peterson et al., "Six Features of Medicare Coordinated Care Demonstration Programs That Cut Hospital Admissions of High-Risk Patients," *Health Affairs,* June 2012 31(6):1156–66.

[13] K. J. Verhaegh, J. L. MacNeil-Vroomen, S. Eslami et al., "Transitional Care Interventions Prevent Hospital Readmissions for Adults with Chronic Illnesses," *Health Affairs,* Sept. 2014 33(9):1531–39.

[14] For example, among PACE programs, higher self-rated interdisciplinary team performance and other program characteristics were associated with better enrollee functional health outcomes. See: D. B. Mukamel, H. Temkin-Greener, R. Delavan et al., "Team Performance and Risk-Adjusted Health Outcomes in the Program of All-Inclusive Care for the Elderly (PACE)," *Gerontologist,* April 2006 46(2):227–37; and D. B. Mukamel, D. R. Peterson, H. Temkin-Greener et al., "Program Characteristics and Enrollees' Outcomes in the Program of All-Inclusive Care for the Elderly (PACE)," *Milbank Quarterly,* 2007 85(3):499–531.

[15] J. E. Mahoney, "Why Multifactorial Fall-Prevention Interventions May Not Work," *Archives of Internal Medicine,* July 12, 2010 170:(13)1117–19; and F. Davidoff, "Improvement Interventions Are Social Treatments, Not Pills," *Annals of Internal Medicine,* Oct. 7, 2014 161(7):526–27.

[16] McCall, Cromwell, and Urato, *Evaluation of Medicare Care Management,* 2010.

[17] C. S. Hong, A. L. Siegel, and T. G. Ferris, *Caring for High-Need, High-Cost Patients: What Makes for a Successful Care Management Program?* (New York: The Commonwealth Fund, Aug. 2014).

[18] S. Klein, M. Hostetter, and D. McCarthy, *A Vision for Using Digital Health Technologies to Empower Consumers and Transform the U.S. Health Care System* (New York: The Commonwealth Fund, Oct. 2014).

[19] T. W. Bickmore, L. M. Pfeifer, D. Byron et al., "Usability of Conversational Agents by Patients with Inadequate Health Literacy: Evidence from Two Clinical Trials," *Journal of Health Communication,* 2010 15(Suppl. 2):197–210; and B. Jack and T. Bickmore, "Louise: Saving Lives, Cutting Costs in Health Care" (Boston: Boston University School of Medicine).

[20] Several barriers to the adoption of new care models were identified by C. Boult in "Challenges to CaRe-Align," Presentation to the CaRe-Align Collaboration Meeting, Dallas, Texas, April 23, 2014 (CaRe-Align is an initiative of the Patient-Centered Outcomes Research Institute and the John A. Hartford Foundation).

[21] L. J. Damschroder, D. C. Aron, R. E. Keith et al., "Fostering Implementation of Health Services Research Findings into Practice: A Consolidated Framework for Advancing Implementation Science," *Implementation Science,* Aug. 7, 2009 4:50.

[22] A. Wandersman, V. H. Chien, and J. Katz, "Toward an Evidence-Based System for Innovation Support for Implementing Innovations with Quality: Tools, Training, Technical Assistance, and Quality Assurance/Quality Improvement," *American Journal of Community Psychology,* Dec. 2012 50(3–4):445–59.

[23] R. Brown, "Care Coordination Programs for Improving Outcomes for High-Need Beneficiaries: What's the Evidence?" Presentation to the Commission on Long-Term Care, July 17, 2013.

[24] M. Bihrle-Johnson and D. McCarthy, *The Visiting Nurse Service of New York's Choice Health Plans: Continuous Care Management for Dually Eligible Medicare and Medicaid Beneficiaries* (New York: The Commonwealth Fund, Jan. 2013).

[25] For example, see: D. O. Meltzer and G. W. Ruhnke, "Redesigning Care for Patients at Increased Hospitalization Risk: The Comprehensive Care Physician Model," *Health Affairs,* May 2014 33(5):5770–77.

[26] D. McCarthy, S. Klein, and A. Cohen, *The Road to Accountable Care: Building Systems for Population Health Management* (New York: The Commonwealth Fund, Oct. 2014).

[27] For a discussion of capitation rates in Medicare Advantage plans, see: R. Brown and D. R. Mann, *Best Bets for Reducing Medicare Costs for Dual Eligible Beneficiaries: Assessing the Evidence* (Washington, D.C.: Henry J. Kaiser Family Foundation, Oct. 2012).

[28] For example, see: A. Hamblin and S. A. Somers, *Introduction to Medicaid Care Management Best Practices* (Princeton, N.J.: Center for Health Care Strategies, Dec. 2011).

[29] For example, see: AcademyHealth, *Evidence Roadmap: Integration of Physical and Behavioral Health Services for Medicaid Enrollees* (Washington, D.C.: AcademyHealth, May 2015).

## Appendix A. Primary Sources

| Source | Evidence reviewed | Models studied |
|---|---|---|
| C. Boult, A. F. Green, L. B. Boult et al., "Successful Models of Comprehensive Care for Older Adults with Chronic Conditions: Evidence for the Institute of Medicine's 'Retooling for an Aging America' Report," *Journal of the American Geriatrics Society,* Dec. 2009 57(12):2328–37. | 123 high-quality studies published between 1987 and 2008 reporting at least one statistically significant positive outcome (quality, health, or efficiency) compared with usual care. Studies were considered high-quality if they had a strong design, adequate sample, valid measures, reliable data collection, and rigorous data analysis. | 15 clinical models staffed primarily by health care professionals and intended to "address several health-related needs of older persons, such as care for several chronic conditions, several aspects of one chronic condition, or persons receiving care from several health care providers" (see Supplement Tables A-O of the Boult paper.) |
| T. Bodenheimer and R. Berry-Millett, *Care Management of Patients with Complex Health Care Needs,* Research Synthesis Report No. 19 (Princeton, N.J.: Robert Wood Johnson Foundation, Dec. 2009). | Controlled and observational studies of care management programs for patients with complex care needs (e.g., multiple chronic conditions, many providers, polypharmacy, frequent hospitalizations, functional limitations) published since 1990, as well as interviews with health care leaders who implemented these programs. | Care management programs defined as "a set of activities designed to assist patients and their support systems in managing medical conditions and related psychosocial problems more effectively, with the aim of improving patients' health status and reducing the need for medical services (see Appendices III and IV of the Bodenheimer paper). |
| L. Nelson, *Lessons from Medicare's Demonstration Projects on Disease Management and Care Coordination,* Working Paper 2012-01 (Washington, D.C. Congressional Budget Office, Jan. 2012); and L. Nelson, *Lessons from Medicare's Demonstration Projects on Disease Management, Care Coordination, and Value-Based Payment,* Issue Brief (Washington, D.C.: Congressional Budget Office, Jan. 2012). | 20 commissioned and peer-reviewed evaluations of programs targeting Medicare fee-for-service beneficiaries, including high-cost beneficiaries with multiple chronic conditions and dually eligible beneficiaries. | 34 disease management and care coordination programs from six major Medicare demonstrations "aimed at improving the care of beneficiaries with chronic conditions or high expected health care costs." The demonstrations included the:<br>• Demonstration of Care Management for High-Cost Beneficiaries (6 sites);<br>• Medicare Coordinated Care Demonstration (15 sites);<br>• Medicare Health Support Pilot Program (8 sites);<br>• Demonstration of Disease Management for Dual Eligible Beneficiaries (1 site);<br>• Demonstration of Informatics for Diabetes Education and Telemedicine (1 site); and<br>• Demonstration of Disease Management for Severely Chronically Ill Beneficiaries (3 sites). |
| R. S. Brown, D. Peikes, G. Peterson et al., "Six Features of Medicare Coordinated Care Demonstration Programs That Cut Hospital Admissions of High-Risk Patients," *Health Affairs,* June 2012 31(6):1156–66 | Written reports, telephone interviews, and site visits with programs from the Medicare Coordinated Care Demonstration, covering fee-for-service beneficiaries with at least one chronic condition. The high-risk subgroup associated with significant reductions in hospital use across the four programs was defined as patients with coronary artery disease, chronic heart failure, and/or chronic obstructive pulmonary disease and at least one hospitalization in the prior year; or those with any of 12 conditions and at least two hospitalizations in the prior two years. | 11 diverse care coordination programs, of which four demonstrated reduced hospitalizations:<br>• Health Quality Partners (a health care quality improvement service provider in suburban and rural southeastern Pennsylvania),<br>• Hospice of the Valley (a hospice and home health agency in the Phoenix area),<br>• Mercy Medical Center (a hospital within an integrated delivery system in rural Iowa),<br>• Washington University (a safety-net academic medical center in St. Louis). |

| **Source** | **Evidence reviewed** | **Models studied** |
|---|---|---|
| R. S. Brown, A. Ghosh, C. Schraeder et al., "Promising Practices in Acute/Primary Care," in C. Schraeder and P. Shelton, eds., *Comprehensive Care Coordination for Chronically Ill Adults* (Wiley, 2011). | Evidence and lessons from rigorously evaluated primary and acute care coordination programs that reduced hospitalizations and expenditures. | Care coordination defined as "a set of activities that assist patients and their families in self-managing their health conditions and related psychosocial problems more effectively; coordinating their care among multiple health and community providers; bridging gaps in care; and receiving the appropriate levels of care." |
| C. S. Hong, A. L. Siegel, and T. G. Ferris, *Caring for High-Need, High-Cost Patients: What Makes for a Successful Care Management Program?* (New York: The Commonwealth Fund, Aug. 2014). | Key informant interviews, review of published manuscripts and program materials for each program serving complex patients with multiple chronic conditions or advanced illness. | 18 successful primary care-integrated complex care management programs "in which specially trained, multidisciplinary teams coordinate closely with primary care teams to meet the needs of patients with multiple chronic conditions or advanced illness, many of whom face social or economic barriers in accessing services" (see Appendix Table 1 of Hong paper). |
| Coalition to Transform Advanced Care, *Advanced Care: A Model for Person-Centered, Integrated Care for Late Stage Chronic Illness*, http://advancedcarecoalition.org. | Best practices derived from interdisciplinary care coordination models. | Interdisciplinary care coordination models "tightly linking inpatient, ambulatory and home/ community settings" for those with advanced illness, which "occurs when a person with one or more chronic diseases begins to decline in health status and ability to function." |

## Appendix B. Example Care Models

The following examples represent a sample of care models and programs described in the text, for which there is relatively stronger evidence of impact. These examples were compiled from published literature and are not exhaustive. Bolded terms correspond to the attributes summarized in Exhibit 3.

| Program/Sponsor | Target Population | Key Components | Results |
|---|---|---|---|
| Geriatric Resources for Assessment and Care of Elders (GRACE), Indiana University[1] | Low-income (<200% of the federal poverty level) seniors with multiple diagnoses[2]<br>25% of seniors enrolled were deemed high-risk for hospitalization; these patients were categorized as a high-risk subgroup for analysis[3] | • Support team consisting of advanced practice nurse and social worker work with elderly **in the home** and community[4]<br>• In-home **assessment** and specific care protocols inform individualized **care plan**<br>• Support team works closely with larger **interdisciplinary care team**<br>• **Patient education** and **self-management** plans include tools for low-literacy seniors | After two intervention years of a three-year controlled research study[5]:<br>• use of emergency department significantly lower in intervention group compared to usual care<br>• hospitalization rate significantly lower in high-risk patients in intervention group compared with high-risk patients receiving usual care<br>• among high-risk patients, the program was cost-neutral in the first two years, and cost-saving in the third year (postintervention) |
| Guided Care, Johns Hopkins University[6] | Older adults with multiple chronic conditions at high risk of high health expenditures in the next year | • Predictive modeling and 12 months of claims data used to **identify** the 20%–25% of patients most at risk of needing complex care in the near future[7]<br>• RNs trained in complex care management perform **in-home assessments** and develop **care plans** to coordinate care with **multidisciplinary providers**[8]<br>• **Patient education** and **self-management** strategies focus on addressing issues before hospitalization becomes necessary | A 32-month cluster-randomized trial at eight urban and suburban practices in the Baltimore–Washington area, representing over 900 patients and 300 family caregivers, found that Guided Care participants experienced:[9]<br>• 29% decrease in home health episodes<br>• 26% fewer skilled nursing facility days<br>• 13% fewer hospital readmissions<br>• 8% fewer skilled nursing facility admissions<br>These improvements were more pronounced among Guided Care patients receiving primary care from an integrated delivery system. |
| Naylor Transitional Care Model, University of Pennsylvania[10] | Hospitalized, high-risk older adults with chronic conditions[11] | • **Multidisciplinary** provider team led by advanced practice nurses engages in comprehensive **discharge planning**<br>• Three-month post-discharge follow-up includes **frequent home visits** and are telephone availability<br>• Involve **patients and family members** in **identifying goals** and building **self-management** skills | Randomized controlled trial found the following one year after discharge:[12]<br>• 36% fewer readmissions<br>• 38% reduction in total costs<br>• Short-term improvements in overall quality of life and patient satisfaction |
| Improving Mood: Promoting Access to Collaborative Treatment (IMPACT), University of Washington[13] (pilot-tested at 18 primary care clinics at 7 sites across the U.S.)[14] | Older adults suffering from depression[15]<br>The model has also been adapted for other populations with depression, including adults of all ages, adolescents, cancer patients, and patients with chronic illnesses, including diabetes. Evaluations indicate that these IMPACT adaptions are also effective.[16] | • **Collaborative care:** Primary care physician works with **depression care manager** (e.g., nurse, social worker, or psychologist supported by medical assistant or other paraprofessional) to develop and implement treatment plan including anti-depressant medication and/or short-term counseling. Team includes **consulting psychiatrist**.<br>• Care manager also **educates patient** about depression and coaches in self-care.<br>• Providers utilize **ongoing measurement and tracking of outcomes** with validated depression screening tool, such as Patient Health Questionnaire-9, and **adapt care** to changing symptoms<br>• Once a patient improves, case manager and patient **jointly develop a plan** to prevent relapse.[17] | A randomized controlled trial of 1801 adults age 60 or older with major depression, dysthymic disorder, or both, found that:<br>• After 12 months, about half of IMPACT patients had a 50% or greater reduction in depressive symptoms from their baseline assessment compared to 19 percent of patients who received usual primary care.[18]<br>• Over a four year period, total health care costs for IMPACT patients were approximately $3,300 lower per patient on average than those of patients receiving usual primary care—even after accounting for the cost of providing the IMPACT intervention.[19] |

| Program/Sponsor | Target Population | Key Components | Results |
|---|---|---|---|
| Health Quality Partners[20] (participant in the Medicare Coordinated Care Demonstration) | Medicare beneficiaries with chronic conditions | • RN care coordinators focus on changing **patient behavior**[21]<br>• Focus on **frequent in-person** contact with both patients and physicians<br>• Evidence-based **patient education** including condition-specific **self-monitoring** training[22] | Randomized controlled study found that after six years the intervention, among high-risk subgroup[23]:<br>• Reduced hospitalizations by 25%<br>• Reduced emergency department visits by 28%<br>• Reduced average monthly Medicare Part A and B expenditures by 21% |
| Massachusetts General Physicians Organization Care Management Program[24] (participant in the Medicare Demonstration for High Cost Medicare Beneficiaries) | Medicare beneficiaries who are high cost and/or have complex conditions | • Care managers are integrated into primary care practices[25]<br>• Care managers provide **patient education** and address both **medical and psychosocial needs**<br>• Focus on **preventing exacerbations** that lead to emergency department visits and inpatient admissions<br>• Case managers also support **end-of-life decision-making** | After three years, intervention group exhibited[26]:<br>• 20% reduction in hospital admissions<br>• 13% reduction in emergency department visits<br>• 7% annual savings after accounting for intervention costs |
| Chronic Disease Self-Management Program (CDSMP), Stanford University[27] (as piloted at Kaiser Permanente, Northern California) | Adults with one or more chronic conditions[28] | • **Patient education** occurs in small group courses in a **community setting**, including family members and caregivers, and teaches strategies and skills to better cope with and manage common problems and symptoms<br>• Course facilitated by two trained **peer leaders**, at least one of whom is a nonmedical professional, who often have chronic conditions themselves<br>• Patients practice strategies and skills and receive highly **interactive feedback** in a supportive environment to enhance their sense of self-efficacy, and their confidence in their **ability to manage their conditions**<br>• Program is of limited duration (2.5 hours per week over 6-week period) and easy to export | A randomized clinical trial of 952 patients age 40 and older with chronic conditions that compared CDSMP patients with wait-list control subjects found that after six months, treatment patients experienced:<br>• fewer physician visits, ER visits, and hospitalizations and shorter lengths of stay<br>• more energy, less fatigue, fewer social limitations, and greater improvement in self-reported health[29]<br>• fewer ER and physician visits, reduced health distress, and improved self-efficacy, compared to baseline, even after two years[30]<br>A national survey of 1,170 CDSMP participants in 17 states at baseline, six months, and one year and found:<br>• significant reductions in ER visits and hospitalizations at six months and a reduction in ER visits at one year<br>• potential net savings in health care costs of $364 per participant, after accounting for cost of program; if 5% of adults with one or more chronic conditions participated in program, national savings in health care costs would be an estimated $3.3 billion.[31] |
| Care Management Plus, Oregon Health and Science University and the John A. Hartford Foundation[32] (piloted at Intermountain Healthcare) | Originally designed to serve adults 65 years and older, who have multiple comorbidities, diabetes, frailty, dementia, depression and other mental health needs; entry is by referral from the primary care provider. (The model has been adapted to serve non-elderly patients with complex needs.) | • Specially trained care managers (usually RNs or social workers) located in primary care clinics perform **person-centered assessment** and work with families and providers to formulate and implement a **care plan**[33]<br>• Care manager ensures **continuity of care** and regular follow up in office, in the home, or by phone<br>• Continuity of care enhanced by specialized **IT system**<br>• Care manager provides **coaching and self-care** education for **patients and families** | Controlled study comparing patients receiving care management in seven intervention clinics with similar patients in six control practices within Intermountain Healthcare found:<br>• decreased hospitalization rates after two years for intervention patients, although this result was only significant among patients with diabetes[34]<br>• approximately 20% reduction in mortality among all Care Management Plus patients, reduction most pronounced in patients with diabetes[35] |

| Program/Sponsor | Target Population | Key Components | Results |
|---|---|---|---|
| Program of All-Inclusive Care for the Elderly (PACE), operated by local nonprofit PACE organizations at 114 sites in 32 states under agreements with the Centers for Medicare and Medicaid Services (CMS)[36] | Adults age 55+ with insurance through Medicare and/or Medicaid, with chronic conditions and functional and/or cognitive impairments, and living in the service area of a local PACE organization<br>Patients must be certified by Medicaid as eligible for nursing home level of care, and able to live safely at home with help from PACE | • Each PACE site provides **comprehensive preventive, primary, acute, and long-term care and social services**, including adult day care, meals, and transportation<br>• **Interdisciplinary team** meets regularly to design individualized care plans<br>• Goal is to allow patients to **live independently** in the community<br>• Patients receive all covered Medicare and Medicaid services through the local PACE organization in their home and community and at a local PACE center, thereby enhancing **care coordination**[37]<br>• Clinical staff are employed or contracted by the local PACE organization, which is paid on a per-capita basis and not based on volume of services provided | A recent review of the literature found that PACE enrollees experienced fewer hospitalizations but more nursing home admissions, better quality for certain aspects of care such as pain management, and lower mortality, than comparison groups.[38]<br>Overall, PACE appeared cost-neutral to Medicare and may have increased costs for Medicaid, though more research is needed to reflect current payment arrangements.[39]<br>A subsequent study found that PACE may be more effective than home and community-based waiver programs in reducing long-term nursing home use, especially for those with cognitive impairments.[40]<br>Higher self-rated PACE team performance and other program characteristics were associated with better enrollee functional health outcomes.[41] |
| CareMore,[42] a subsidiary of Anthem | Medicare Advantage plan members in California, Nevada, Arizona, Virginia, and Ohio, and Medicaid managed care plan members in Tennessee | • Identifies members who are frail and/or chronically ill and in need of or at high risk for hospital admission via **comprehensive initial visit** upon enrollment<br>• Extensivist physicians provide care to hospitalized patients and oversee postdischarge care in skilled nursing facilities and other settings<br>• Frail and/or chronically ill members are also enrolled in **disease-specific management** programs<br>• Customized **electronic health record** and **remote monitoring** let patients monitor vitals in their homes, with results immediately shared with CareMore team<br>• Provides help to members in accessing **social and other nonmedical support services** and provides **transportation** to CareMore Care Centers | As reported in 2011, CareMore's Medicare Advantage plan achieved the following results:<br>• 30-day hospital readmissions rate was lower than for overall Medicare population (13.6% compared to 19.6% for Medicare fee-for-service).[43]<br>• members' per capita health spending was 15% less than the regional average.[44]<br>• hospital length-of-stay was shorter: 3.2 days compared to 5.6 day average in Medicare fee-for-service and 4.5 day average for traditional hospitalist programs in California.[45]<br>Results not yet available for the Medicaid program. |
| Commonwealth Care Alliance[46] | Dual-eligibles age 65+ enrolled in a Medicare Advantage Special Needs Plan that participates in the Massachusetts Senior Care Options program[47]<br>Dual eligibles age 64 and younger in the Massachusetts One Care program | • Provides enhanced primary care and **care coordination** through **multidisciplinary clinical teams** led by nurse practitioners[48]<br>• After a **comprehensive assessment, individualized care plans** are developed to promote independence and functioning<br>• Integration of **behavioral health** care for those who need it<br>• Care team available 24/7 **in the home**, in the hospital, or at the doctor's office<br>• Patients' records available 24/7 in proprietary **electronic health record** system[49] | Internal Commonwealth Care Alliance data suggests that Senior Care Options enrollees experienced[50]:<br>• 48% fewer hospital days than comparable dual eligible in a fee-for-service environment<br>• 66% fewer nursing home placements<br>Results not yet available for the OneCare program. |

| Program/Sponsor | Target Population | Key Components | Results |
|---|---|---|---|
| Hospital at Home[51] (developed at Johns Hopkins University and tested in medical centers across the U.S.) | Older patients with a targeted acute illness that requires hospital-level care, who also meet validated medical eligibility criteria and live within designated geographic catchment area (e.g. 25 miles or 30-minute travel time from hospital.) | • Potentially eligible **patients are identified** in the hospital emergency department or ambulatory care site. If they meet the validated criteria and consent to participate, they evaluated by physician and transported home, usually via ambulance<br>• **One-on-one nursing** for initial stage and at least **daily nurse and physician visits** thereafter<br>• Both nurses and physicians on call **around-the-clock** for urgent or emergent visits<br>• Some diagnostic services and treatments performed **in home setting**<br>• Same criteria and guidelines are used to judge patient readiness for transition to skilled nursing facility, or discharge from Hospital at Home as from hospital. | Evaluation of patients in Hospital at Home program and comparison group of similar inpatients in 2009–2010[52]:<br>• Hospital at Home patients showed comparable or better clinical outcomes and higher satisfaction levels<br>• Excluding physician costs, Hospital at Home per-patient average costs were 19% lower than similar inpatient per-patient average costs for the comparison group. Cost savings were due to lower average length-of-stay and few diagnostic and lab tests.<br>Prospective quasi-experiment with patients 65 and older in three Medicare Managed Care plans at two sites, and at a Veterans Administration medical center, found that[53]:<br>• patients treated at Hospital at Home had shorter length of stay and lower average costs than hospital inpatients. |

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By Christina Bielaszka-DuVernay

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### INNOVATION PROFILE

# The 'GRACE' Model: In-Home Assessments Lead To Better Care For Dual Eligibles

**SYSTEMS** Wishard Health Services, based in Indianapolis, Indiana, the third-largest safety-net health organization in the United States; HealthCare Partners Medical Group (Los Angeles); the Indianapolis Veterans Affairs (VA) Medical Center (part of the Veterans Health Administration Office of Geriatrics and Extended Care); and the Aging and Disability Resource Center Evidence-Based Care Transition Programs, funded by the US Administration on Aging and the Centers for Medicare and Medicaid Services.

**KEY INNOVATION** Geriatric Resources for Assessment and Care of Elders (GRACE), an integrated care model targeting low-income seniors, many dually eligible and most with multiple chronic conditions. The model uses in-home assessments by a team consisting of a nurse practitioner and a social worker to develop an individualized plan of care.

**COST SAVINGS** In a randomized controlled trial of 951 adults age sixty-five and older, with incomes below 200 percent of the federal poverty level, high-risk patients enrolled in GRACE had fewer visits to emergency departments, hospitalizations, and readmissions and reduced hospital costs compared to the control group. The two-year GRACE intervention saved $1,500 per enrolled high-risk patient by the second year.

**QUALITY IMPROVEMENT RESULTS** In the same randomized controlled trial, GRACE received high ratings by physicians. GRACE patients also reported higher quality of life compared with the control group.

**CHALLENGES** The GRACE model improves health and reduces costs in a capitated system, but only 10 percent of its costs are covered by fee-for-service Medicare.

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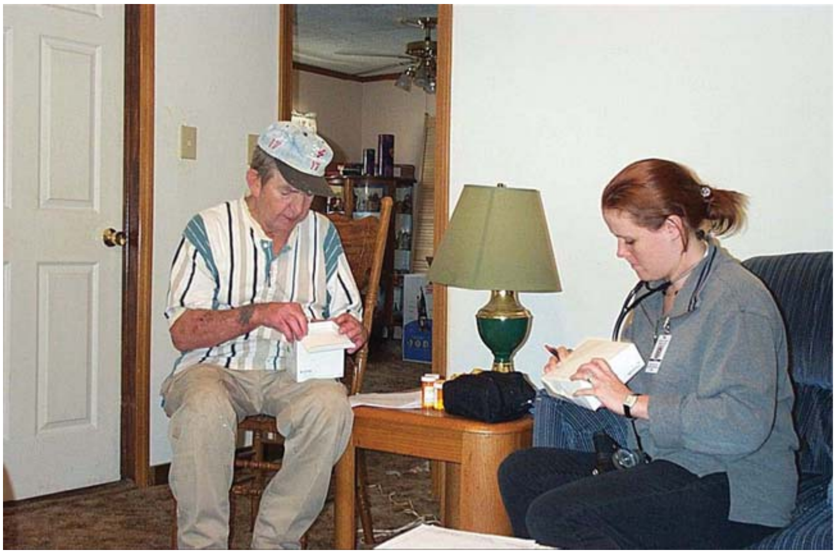
More than half of Medicare beneficiaries receive treatment each year for five or more chronic conditions,[1] and, on average, a Medicare patient is seen by two primary care physicians and five specialists in four practices.[2] Fragmentation of care is not good for seniors' health, and lack of coordination only adds to the already high cost of managing multiple chronic conditions.

An innovative program called Geriatric Resources for Assessment and Care of Elders (GRACE), developed at Indianapolis-based Wishard Health Services, not only delivers comprehensive, coordinated care to Medicare patients and improves their health outcomes, but also lowers the cost of care.

The third-largest safety-net health system in the United States, Wishard provides care to approximately 7,000 low-income seniors, about a



**Nurse practitioner Carrie Bone** (right) reviews medications and medical supplies with a GRACE patient in his home. The GRACE care process starts with a comprehensive in-home assessment by a nurse practitioner–social worker team. This team then brings information back to an expanded GRACE team that puts together a care plan based on twelve evidence-based care protocols covering medication management, depression, mobility issues, vision troubles, and other common geriatric conditions.

Photo: Indiana University School of Medicine

third of whom are eligible for both Medicare and Medicaid (known as dual eligibles). Most suffer from a cluster of chronic conditions—for instance, hypertension, heart failure, and diabetes—and a large number contend with geriatric conditions such as depression, cognitive impairment, and physical limitations. It's well documented that this population often doesn't receive recommended care and yet accounts for a disproportionate share of the nation's health care expenses.

"Traditionally, the care provided to low-income seniors is reactive and fragmented," says Steven R. Counsell, who developed the GRACE program with colleagues at Indiana University School of Medicine, many of whom provide clinical services at Wishard. "Mental health care is especially important in this population, and is often off in its own silo." And sometimes, Counsell adds, "caregivers don't recognize that depression is not normal in older adults and can be treated." In contrast, GRACE coordinates care not only between the primary care physician and specialists, but also between them and pharmacy and mental health care providers.

The program was designed to take full advantage of the skills of primary care and geriatrics health care professionals, of which there is a growing shortage. Integrating medical and social care is also key, especially for people with disabilities or functional limitations.

## GRACE In Action

The GRACE care process starts with a comprehensive in-home assessment by a nurse practitioner and social worker that typically takes about an hour and a half. This two-person team is responsible for coordinating care for the patient on an ongoing basis. The team brings information back to an expanded GRACE team, led by a geriatrician and including a pharmacist, physical therapist, community resource expert, and mental health case manager (typically a licensed clinical social worker but sometimes a psychologist). This larger team puts together a care plan based on twelve evidence-based care protocols covering medication management, depression, mobility issues, vision troubles, and other common geriatric conditions.

The nurse practitioner and social worker then meet with the patient's primary care physician to review the recommended care plan and obtain the physician's input. Then, in a second in-home visit, the team communicates the finalized care plan with the patient, discusses such logistics as making appointments, and provides health coaching as needed. The nurse practitioner and social worker also communicate the care plan to family members or other care providers as appropriate.

Each care plan is carefully tailored to the needs of each patient. For example, if falls have been an issue, the nurse practitioner will teach the patient how to avoid falls and how best to get up from them when they do occur. Depending on the patient's level of functional ability, the social worker might make appointments with recommended providers and ensure that the patient has transportation to get to the appointments.

"The GRACE team doesn't just put together a care plan; it is accountable for ensuring that each patient's needed health care gets delivered," Counsell says. That accountability is reinforced by a web-based care management tracking system that also establishes coordination and continuity of care among all health care professionals and sites of care.

GRACE patients are contacted by phone at least once a month. A home visit occurs after a hospitalization or emergency department visit, as does an additional review by the entire GRACE team to discuss whether anything could have been done to avoid the patient's need for acute care. At weeks three and six, and months three, six, and nine, the entire team reviews the patient's care plan, its implementation, and its results. Each patient also receives an annual assessment and home visit.

To build working relationships among the care team, says Counsell, a primary care physician with patients in the GRACE program is assigned to one nurse practitioner–social worker team. "According to one of the nurse practitioners, her relationship with the primary care physician is the key reason the GRACE program works so well," Counsell says.

Another success factor he points to is including a social worker on the core team. "Oftentimes the medical caregiver and the community-based social worker are essentially oblivious of each other's efforts," Counsell explains. "In the GRACE program, their services are integrated and synergized." Equally important are the in-home visits, he says. "There, you really get the rest of the story. Plus they build trust over time; we see patients' behavior changing over time as they come to trust the nurse practitioner and social worker."

## Managing Transitions

A particular focus of GRACE is on care transitions, which can be perilous for low-income elderly people. "Older persons with functional limitations or a lack of resources to fall back onto often have difficulty advocating for themselves," says Counsell. In the GRACE program, they have advocates in the nurse practitioner–social worker team.

If someone is admitted to the hospital, the nurse practitioner–social worker team communicates with the hospital team about the patient's baseline status, health care goals, and the care plan. The team also informs the patient's primary care physician of the admission. The nurse practitioner–social worker team collaborates with the inpatient team to develop the transition plan before the patient's discharge. The team then ensures that the plan is fully implemented—for example, that home-based physical therapy or other home care takes place. The nurse practitioner also reconciles medications and provides the patient with new medication instructions that he or she can understand.

For patients admitted to a nursing home, the GRACE team communicates important health information and coordinates care with the nursing home attending physician and staff. The ultimate goal is to have the patient return home with adequate support, both to promote the patient's happiness and well-being and to save on high-cost nursing home and acute care services.

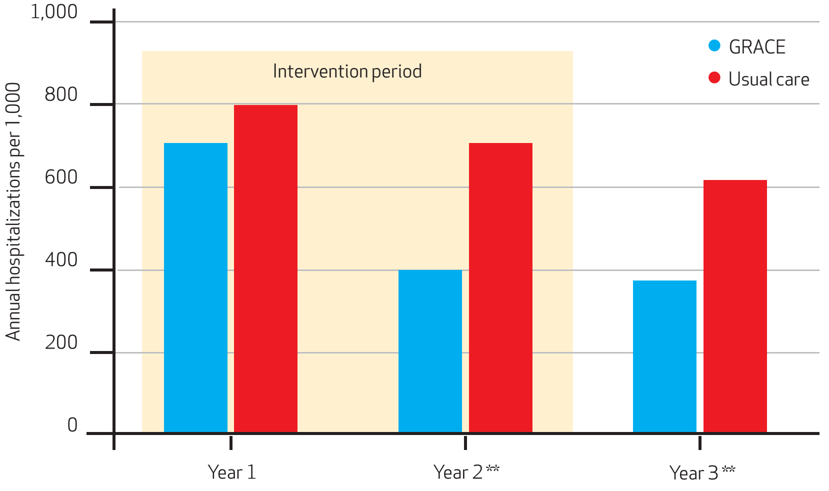
## GRACE's Results

With funding support from the National Institute on Aging, a two-year controlled, randomized trial of GRACE was conducted at Wishard. Physicians reported greater satisfaction with the care their GRACE patients received compared with care received by patients in the control group.[3] First-year results for GRACE-enrolled patients showed dramatic improvements in indicators of quality health care, both in general medical care (flu shots, care coordination during transitions) and in geriatric-specific care (evaluation of falls, treatment of depression). At the end of the two-year trial period, GRACE patients reported better health in quality-of-life scales for general health, vitality, social function, and mental health.[4]

For the sickest patients, or for those at the

**EXHIBIT 1**

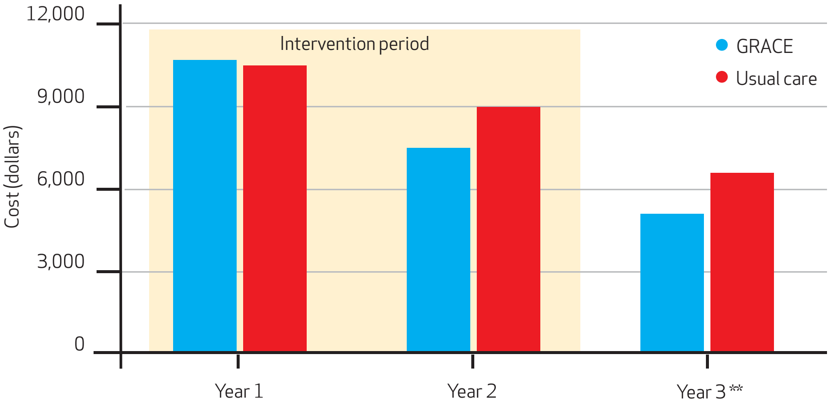
**Annual Hospitalization Rates Per 1,000 Among GRACE Intervention And Usual Care (Comparison) Patients In High-Risk Group, Years 1–3**



**SOURCE** See Note 5 in text. **NOTE** GRACE is Geriatric Resources for Assessment and Care of Elders. **$p < 0.05$

**EXHIBIT 2**

**Average Total Health Care Costs Among GRACE Intervention And Usual Care (Comparison) Patients In High-Risk Group, Years 1–3**



**SOURCE** See Note 3 in text. **NOTE** GRACE is Geriatric Resources for Assessment and Care of Elders. **$p < 0.05$

highest risk of hospitalization, GRACE reduced hospital admission rates by 12 percent and 44 percent in the first and second years, respectively. What's particularly interesting, says Counsell, is that the program had a sustained impact on hospitalizations. One year after the study's end, the GRACE patients at high risk of hospitalization had a 40 percent lower hospital admission rate compared with high-risk patients in the control group (Exhibit 1).[5]

The cost impact of GRACE was neutral in the first year; the savings from reduced hospitalizations were offset by program costs. But in the second year, lower hospital costs more than offset program costs, and clear cost savings were evident the following year (Exhibit 2). Further potential for cost savings exists if the GRACE model were used to prevent or delay nursing home placement in patients at risk for long-term institutionalization.[5]

## Challenges And Implications

The GRACE program provides better care and lower overall costs, and thus is feasible in capitated Medicare managed care. But under traditional, fee-for-service Medicare, only 10 percent of its costs would now be covered, because most GRACE services such as team conferences and telephone care management are not reimbursed. Counsell suggests that it would be instructive to test the GRACE model with dual eligibles to see if there is "some way to share the savings" between the Medicare and Medicaid programs and providers. That could help cut down on cost shifting between the programs, Counsell says, and perhaps "redirect funds that would have been spent on hospital and nursing home care to upstream preventive and chronic care." ■

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CLINICAL INVESTIGATION

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# Differences in healthcare utilization between enrollees of fully integrated dual eligible special needs plans versus non-fully integrated plans

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## Abstract

**Background:** Policymakers advocate care integration models to enhance Medicare and Medicaid service coordination for dually eligible individuals. One rapidly expanding model is the fully integrated dual eligible (FIDE) plan, a subtype of the dual eligible special needs plan (D-SNP) in which a parent insurer manages Medicare and Medicaid spending for dually eligible individuals. We examined healthcare utilization differences among dually eligible individuals aged 65 years or older enrolled in D-SNPs by plan type (FIDE vs non-FIDE).

**Methods:** Using 2018 Medicare Advantage encounters and Medicaid claims of FIDE and non-FIDE enrollees in six states (AZ, CA, FL, NY, TN, WI), we compared healthcare utilization between plan types, adjusting for enrollee characteristics and county indicators. We applied propensity score weighting to address differences between FIDE and non-FIDE plan enrollees.

**Results:** In our main analysis, which included all dually eligible individuals in our sample, we observed no significant difference in healthcare utilization between FIDE and non-FIDE plan enrollees. However, we identified some differences in healthcare utilization between FIDE and non-FIDE plan enrollees in subgroup analyses. For example, among home and community-based service (HCBS) users, FIDE plan enrollees had 6.0 fewer hospitalizations per 1000 person-months (95% CI: −7.9, −4.0) and were 7.0 percentage points more likely to be discharged to home (95% CI: 2.6, 11.5) after hospitalization, compared to non-FIDE plan enrollees.

**Conclusion:** While we found no differences in healthcare utilization between FIDE and non-FIDE plan enrollees when considering all dually eligible individuals in our sample, some differences emerged when focusing on subgroups. For example, HCBS users with FIDE plans had fewer hospitalizations and were more likely to be discharged to their home following hospitalization, compared to HCBS users with non-FIDE plans. These findings suggest that FIDE plans may improve care coordination for specific subsets of dually eligible individuals.

KEYWORDS

dually eligible individuals, FIDE plans, Medicaid, Medicare

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See related Editorial by Boling et al.
See related article by Parsons et al. in this issue.

# INTRODUCTION

Fragmentation in the American healthcare system is a significant issue, especially for older adults with both Medicare and Medicaid benefits ("dually eligible individuals"). For these individuals, Medicare pays for primary, acute, and post-acute care, as well as prescription drugs, while Medicaid pays for Medicare cost-sharing, long-term care, and behavioral health services.[1] However, the services covered by Medicare and Medicaid are not well coordinated. This lack of coordination can cause confusion, and dually eligible individuals often struggle to understand which services are available through which program and how to access them.[2] Furthermore, care fragmentation can delay access to cost-saving services and create conflicting priorities between Medicare and Medicaid, potentially impeding cost-effective healthcare utilization and further driving up healthcare costs.[3] Compounding this problem of care fragmentation is the fact that dually eligible individuals often have complex medical and social needs. Compared to Medicare-only enrollees, dually eligible individuals aged 65 or older are more likely to live in extreme poverty, report fair/poor health, have a mental health diagnosis, and experience limitations in activities of daily living.[4] All of these factors can exacerbate the already daunting task of care coordination.

To address these concerns, policymakers have developed programs to integrate Medicare and Medicaid services. The dual-eligible special needs plan or D-SNP is the most widespread model intended to serve as a platform for care integration for dually eligible individuals.[5] As a sub-type of Medicare Advantage plans, D-SNPs exclusively enroll dually eligible individuals and are required to have contracts with state Medicaid agencies that define the D-SNP's responsibilities for care coordination.[5,6] However, these contracts only need to include minimal integration requirements, such as verifying a person's eligibility for Medicare and Medicaid and notifying Medicaid programs when an enrollee is hospitalized.[5] Furthermore, most D-SNPs are not financially accountable for Medicaid spending, limiting their incentive to provide fully integrated care.[6]

Given the limited integration requirements for D-SNPs, it is perhaps not surprising that studies, in general, have found D-SNP performance is not significantly different from that of regular Medicare Advantage plans. Roberts et al.[6] reported that in comparison to dually eligible individuals with regular Medicare Advantage plans, D-SNP enrollees' outcomes were better in a limited number of measures, including satisfaction with out-of-pocket healthcare expenses and availability of care from specialists, but not better in most measures. Similarly, in Haviland et al.'s study,[7] D-SNP enrollees aged 65 years or older reported better experience with their prescription drug coverage but had worse experience with care coordination and rated care

**Key points**

- For all dually eligible individuals aged 65 years or older, we observed no difference in healthcare utilization between fully integrated dual eligible (FIDE) versus non-FIDE plans (i.e., dual eligible special needs plans or D-SNPs that were not FIDE plans).
- Subgroup analyses showed some differences in healthcare utilization between the two groups.
- For example, among home and community-based service users, FIDE plan enrollees had fewer hospitalizations and were more likely to be discharged to home after hospitalization compared to non-FIDE plan enrollees.

**Why does this paper matter?**

Fragmentation in the American healthcare system is a pressing concern, particularly for older adults with both Medicare and Medicaid benefits (i.e., dually eligible individuals). Policymakers have long sought care integration models to enhance Medicare and Medicaid service coordination for dually eligible individuals. One rapidly expanding model is the fully integrated dual eligible (FIDE) plan, a sub-type of the dual eligible special needs plan (D-SNP), where a parent insurer manages Medicare and Medicaid spending for dually eligible individuals. However, the rapid adoption of FIDE plans lacks empirical evidence to support whether FIDE plans are linked to meaningful differences in healthcare utilization among dually eligible individuals. This lack of evidence impedes informed policy-making and potentially impacts the care for dually eligible individuals enrolled in FIDE plans. To close this gap in the literature, we used Medicare Advantage encounters and Medicaid claims data from 2018 and examined differences in healthcare utilization among dually eligible individuals aged 65 years or older enrolled in D-SNPs by plan type (FIDE vs non-FIDE plans). Our study represents one of the first explorations of FIDE plans, using detailed, large-scale data. Furthermore, it provides a foundation for future investigations to identify the key factors linked to the success of FIDE plans in advancing care integration for dually eligible individuals.

as worse than those with regular Medicare Advantage plans. Nevertheless, Congress permanently authorized D-SNPs in 2018,[8] and enrollment has grown from approximately 15% of dually eligible individuals in September 2013 to over 40% in August 2023.[4,9]

For D-SNPs that provide a higher level of integration, the Centers for Medicare and Medicaid Services (CMS) designates the plan as a FIDE plan. To attain FIDE plan status, D-SNPs must fulfill several criteria, including: (1) the D-SNP or its parent insurance company manages Medicaid long-term care spending via a Medicaid capitation contract; (2) the D-SNP should cover other Medicaid benefits, including behavioral health, unless the state chooses to carve those benefits out of the contract, and (3) the D-SNP integrates certain administrative functions.[7,10,11] Because a single insurance company is financially responsible for both Medicare and Medicaid spending, FIDE plans are expected to have both the capacity and incentives to coordinate Medicare and Medicaid services.

FIDE plan enrollment increased from 99,513 (constituting 6% of D-SNP enrollees) in September 2013 to 419,810 (representing 8% of D-SNP enrollees) in August 2023.[9,12] As of August 2023, FIDE plans were available in 12 states (AZ, CA, FL, ID, MN, MN, NJ, NY, PA, TN, VA, and WI). The upward trend in enrollment is anticipated to continue as additional states intend to adopt FIDE plans.[9,13]

However, this rapid adoption of FIDE plans lacks empirical evidence. It is unclear if FIDE plans are linked to meaningful differences in care among dually eligible individuals. This lack of evidence impedes informed policymaking and potentially impacts the care for dually eligible individuals enrolled in FIDE plans. To close this gap in the literature, we used nationwide Medicare Advantage encounters and Medicaid claims data from 2018 and examined differences in healthcare utilization among dually eligible individuals aged 65 years or older, enrolled in D-SNPs by plan type (FIDE vs non-FIDE plans). We hypothesized that FIDE plan enrollees would receive superior care coordination compared to those with non-FIDE plans, resulting in greater use of home and community-based services (HCBS), lower utilization of nursing facility services, fewer hospitalizations and emergency department (ED) visits, higher rates of hospital discharge to home rather than more costly institutional post-acute care, lower inpatient readmission rates, and shorter hospital stays.

## METHODS

### Data

We analyzed 2018 national Medicare Advantage encounters and Medicaid claims data linked at the beneficiary level. We used the 100% Medicare Master Beneficiary Summary File to identify full dual-eligible beneficiaries at least 65 years of age. We used the Transformed Medicaid Statistical Information System Analytic Files to identify each dual-eligible beneficiary's HCBS or nursing facility service use and Medicare Encounter files to identify hospitalizations and ED visits (see Supplemental Table S1).[14]

### Sample

We first identified 760,205 individuals at least 65 years of age and continuously enrolled in a Medicare Advantage D-SNP with full Medicaid benefits while alive in 2018. We included those who received full Medicaid benefits through either a fee-for-service or managed care plan. We excluded individuals who switched D-SNP types (e.g., switched from a FIDE to non-FIDE plan) in 2018. We also excluded those not continuously enrolled in Medicare Advantage in 2016 and 2017 because we used encounter records from 2016 to 2017 to identify each individual's health status. Finally, we excluded those who lived in counties that did not have at least 20 dually eligible individuals enrolled in both FIDE and non-FIDE plans. Our final sample consisted of 240,084 dually eligible individuals in 127 counties in six states (AZ, CA, FL, NY, TN, and WI) (see Supplemental Figure S1 for study sample selection; see Table S2 for a list of unique FIDE plans included in this study. Approximately 46% of the FIDE plans were operated by UnitedHealthcare).[14] Our sample did not include dually eligible individuals enrolled in the Program of All-Inclusive Care for the Elderly (PACE) or Financial Alignment Initiative models because they could not also enroll in a D-SNP.[15]

### Outcomes

Our outcomes included (1) any HCBS use (yes/no), (2) any long-term nursing facility use (at least 100-day continuous nursing facility stay with no more than a 10-day gap; yes/no), (3) any new long-term nursing facility placement (at least 100-day nursing facility stay during the first 265 days of 2018 with no prior stay in 2016 or 2017; yes/no), (4) number of hospitalizations, and 5) number of ED visits. For these five outcomes, beneficiaries were assessed from January 1, 2018, until they transitioned to hospice, died, or December 31, 2018, whichever came first. Among those with at least one hospitalization, we analyzed (6) length of hospital stay (days), (7) 30-day all-cause readmissions (yes/no), and (8) hospital discharge to home as opposed to institutional post-acute care (yes/no). For these three hospitalization-related outcomes, we excluded beneficiaries who died during their hospitalization (Supplemental Section S1 and Table S3).

## Covariates

We classified a beneficiary's D-SNP type as a FIDE or non-FIDE plan by linking each beneficiary's monthly Medicare Advantage contract and plan ID in the Medicare enrollment file to the corresponding contract and plan ID in monthly Special-Needs Plan Comprehensive Reports published by CMS.[16] We accounted for beneficiary age, sex, race and ethnicity, original reason for Medicare entitlement (old age vs disability/end stage renal disease), 30 chronic condition indicators (based on Chronic Conditions Data Warehouse algorithms),[17] frailty index score,[18] and a zip-code-level Social Deprivation Index score as a measure of socioeconomic factors that might influence proximity to and use of healthcare resources (Supplemental Table S4).[19,20]

## Statistical analyses

To estimate the association of FIDE versus non-FIDE plan enrollment with healthcare utilization, we conducted a separate multivariable regression for each outcome. To address differences between FIDE and non-FIDE plan enrollees that might affect outcomes, we weighted models with covariate balancing propensity scores (for average treatment effect on the treated). This approach reweights the non-FIDE plan enrollees to make their beneficiary characteristics similar to those of FIDE plan enrollees within each county.[21] We chose to balance FIDE and non-FIDE plan enrollees' characteristics within each county, as opposed to across counties, because health plans are offered at the county level (Supplemental Section S2). We also adjusted for beneficiary characteristics described above and indicators of each county, and estimated robust standard errors clustered on county. We used the model output to calculate marginal outcomes for both FIDE and non-FIDE plan enrollees as well as the difference in outcomes between the two groups (Supplemental Section S3).[14]

## Supplementary analyses

To assess the generalizability of our findings, we compared beneficiary characteristics between those included in our final sample (after applying all exclusions) and those excluded from our sample. We also conducted supplementary analyses in four subgroups. While data quality continues to improve with each release from CMS, Medicare Advantage encounter data are known to be incomplete.[22,23] Therefore, we further restricted our sample to (1) beneficiaries enrolled in Medicare Advantage contracts identified as having <10% missing inpatient encounter stays compared to MedPAR data and less than ±10% difference in both ambulatory and ED visits compared to HEDIS data, and repeated our analyses.[23] We also restricted our sample to (2) beneficiaries with Alzheimer's disease and related dementias, (3) those who used HCBS in January 2018, and (4) community-dwelling beneficiaries with high needs (i.e., HCBS users with recent hospitalization and post-acute care in the prior 12 months, coupled with two or more chronic conditions; based on modified eligibility criteria for the Independence at Home Qualified Program[24]), and repeated our analyses. FIDE plan coordination may demonstrate a heightened benefit for these groups of individuals. All statistical tests were two-sided and statistical significance was set at $p < 0.05$.

# RESULTS

## Sample characteristics

Our sample consisted of 35,370 FIDE plan enrollees and 204,714 non-FIDE plan enrollees in six states (AZ, CA, FL, NY, TN, WI) (Table 1). Prior to weighting, FIDE plan enrollees were, on average, older and more likely to be female, racialized as Black or White, and qualify for Medicare because of disability compared to non-FIDE plan enrollees. FIDE plan enrollees had a higher chronic condition count on average and were more likely than non-FIDE plan enrollees to have a diagnosis of dementia, cardiovascular disease, and depression, among other conditions (Table 1 and Supplemental Table S5). After weighting, the distribution of sample characteristics was generally balanced across plan type within counties (Supplemental Figures S2 and S3 and Tables S6 and S7).

## Association of FIDE plan enrollment with healthcare utilization

Overall, we observed no difference in healthcare utilization between FIDE and non-FIDE plan enrollees in adjusted analyses. For example, 40.8% (95% CI: 34.1, 47.6) of FIDE plan enrollees and 41.0% (95% CI: 38.9, 43.0) of non-FIDE plan enrollees used any HCBS, resulting in a statistically non-significant 0.1 percentage-point difference (95% CI: −8.9, 8.7) between two groups (Table 2). We observed a similar pattern for long-term nursing facility use, new long-term nursing facility

**TABLE 1** Characteristics of dual eligible beneficiaries enrolled in Medicare Advantage FIDE and non-FIDE D-SNPs, 2018.

| | **FIDE, *n* (%)** | **Non-FIDE, *n* (%)** | ***p*** |
|---|---|---|---|
| *n* | 35,370 | 204,714 | |
| Demographics and enrollment | | | |
| Age (mean (SD)) | 77.32 (7.61) | 76.26 (7.09) | <0.001 |
| Female | 24,600 (69.6) | 132,041 (64.5) | <0.001 |
| Race (%) | | | <0.001 |
| American Indian/Alaskan Native | 111 (0.3) | 708 (0.3) | |
| Asian/Pacific Islander | 1838 (5.2) | 35,630 (17.4) | |
| Black | 6441 (18.2) | 32,522 (15.9) | |
| Hispanic | 12,728 (36.0) | 100,812 (49.2) | |
| Other | 331 (0.9) | 2380 (1.2) | |
| Unknown | 179 (0.5) | 1781 (0.9) | |
| White non-Hispanic | 13,742 (38.9) | 30,881 (15.1) | |
| SDI score (mean (SD)) | 70.57 (25.33) | 78.94 (22.87) | <0.001 |
| Original entitlement | | | |
| Disability and/or ESRD | 9498 (26.9) | 34,085 (16.7) | <0.001 |
| Old age | 25,872 (73.1) | 170,629 (83.3) | <0.001 |
| Health characteristics | | | |
| CCW30 count (mean (SD)) | 6.4 (3.14) | 5.47 (2.79) | <0.001 |
| Frailty index score (mean (SD)) | 0.22 (0.09) | 0.18 (0.07) | <0.001 |
| Alzheimer's or related dementia | 6551 (18.5) | 18,734 (9.2) | <0.001 |
| Anemia | 10,902 (30.8) | 49,169 (24.0) | <0.001 |
| Arthritis | 19,165 (54.2) | 91,994 (44.9) | <0.001 |
| Atrial fibrillation | 4907 (13.9) | 17,084 (8.3) | <0.001 |
| Cancer—any[a] | 3532 (10.0) | 18,806 (9.2) | <0.001 |
| Cardiovascular disease[b] | 13,859 (39.2) | 58,540 (28.6) | <0.001 |
| Chronic kidney disease | 12,909 (36.5) | 62,071 (30.3) | <0.001 |
| COPD | 10,994 (31.1) | 42,258 (20.6) | <0.001 |
| Depression | 12,281 (34.7) | 45,615 (22.3) | <0.001 |
| Diabetes | 18,029 (51.0) | 99,253 (48.5) | <0.001 |
| Stroke | 3658 (10.3) | 14,582 (7.1) | <0.001 |
| Healthcare utilization | | | |
| Any LTSS use | 15,613 (44.1) | 86,528 (42.3) | <0.001 |
| Any HCBS use | 14,641 (41.4) | 85,782 (41.9) | 0.074 |
| Any nursing facility use | 1453 (4.1) | 1429 (0.7) | <0.001 |
| Any new nursing facility placement | 333 (0.9) | 554 (0.3) | <0.001 |
| Hospitalizations (mean (SD)) | 0.34 (0.85) | 0.24 (0.72) | <0.001 |
| No. of hospitalizations | | | <0.001 |
| 0 | 28,117 (79.5) | 173,783 (84.9) | |
| 1–2 | 6139 (17.4) | 26,943 (13.2) | |
| 3+ | 1114 (3.1) | 3988 (1.9) | |
| ED visits (mean (SD)) | 1.1 (1.97) | 0.75 (1.61) | <0.001 |
| No. of ED visits | | | <0.001 |
| 0 | 18,823 (53.2) | 130,759 (63.9) | |

(Continues)

**TABLE 1** (Continued)

| | FIDE, *n* (%) | Non-FIDE, *n* (%) | *p* |
|---|---|---|---|
| 1–2 | 11,601 (32.8) | 56,493 (27.6) | |
| 3+ | 4946 (14.0) | 17,462 (8.5) | |
| Among those hospitalized | | | |
| Discharge location | | | <0.001 |
| Home | 7056 (68.3) | 36,967 (79.1) | |
| Other | 757 (7.3) | 3060 (6.5) | |
| Institutional PAC | 2515 (24.4) | 6703 (14.3) | |
| 30-day readmissions | 1641 (16.0) | 6705 (14.6) | <0.001 |
| Length of hospital stay (mean days (SD)) | 6.74 (6.72) | 6.44 (6.41) | <0.001 |

Abbreviations: CCW30, Chronic Condition Warehouse 30; ESRD, end-stage renal disease; HCBS, home-and-community-based services; LTSS, long-term services and supports; PAC, post-acute care; SDI, Social Deprivation Index.

[a] Any cancer includes breast, colorectal, endometrial, lung, prostate, or urologic cancers.

[b] Cardiovascular disease includes heart failure, ischemic heart disease, and acute myocardial infarction.

**TABLE 2** Association between Medicare Advantage D-SNP plan type and healthcare utilization among dual-eligible individuals at least 65 years of age, 2018.

| | FIDE | Non-FIDE | |
|---|---|---|---|
| **Outcomes** | **Adjusted percentage (95% CI)** | **Adjusted percentage (95% CI)** | **Adjusted difference[a] (95% CI)** |
| Any HCBS use | 40.8 (34.1, 47.6) | 41.0 (38.9, 43.0) | −0.1 (−8.9, 8.7) |
| Any nursing facility use | 4.2 (1.5, 6.8) | 2.1 (0.9, 3.3) | 2.1 (−1.7, 5.9) |
| Any new NF placement | 1.1 (0.7, 1.4) | 0.9 (0.7, 1.1) | 0.2 (−0.4, 0.7) |
| | **Adjusted rate/1000 PM (95% CI)** | **Adjusted rate/1000 PM (95% CI)** | **Adjusted difference[a] (95% CI)** |
| No. of hospitalizations | 38.6 (36.9, 40.3) | 40.1 (37.9, 42.3) | −1.5 (−4.1, 1.2) |
| No. of ED visits | 168.4 (131.1, 205.8) | 155.4 (137.7, 173.1) | 13.0 (−9.2, 35.3) |

*Note*: Estimates were adjusted for variables in Exhibit 1 as well as county fixed effects and were weighted by covariate balance propensity score weights.

[a] Adjusted absolute difference in outcome between FIDE and non-FIDE enrollees; a positive number indicates the outcome is greater among FIDE enrollees compared to non-FIDE enrollees.

*Source*: Authors' analyses of Medicare Advantage and Medicaid data, 2018.

placements, and hospitalization and ED visit rates. Among enrollees with at least one hospitalization, we observed no statistically significant difference in the percentage of being discharged home as opposed to institutional post-acute care (−0.3 percentage points, 95% CI: −5.4, 4.8) or in the percentage of a 30-day readmission (−0.3 percentage points, 95% CI: −1.1, 0.4) between FIDE and non-FIDE enrollees (Table 3). The mean length of hospital stay was also similar for both plan types (0.1-day difference, 95% CI: −0.2, 0.3).

## Supplementary analyses

Compared to beneficiaries who were excluded from our final sample, those who were included were more likely to be Hispanic and had more chronic conditions on average (Supplemental Table S8). The general pattern we observed in our sample, that FIDE plan enrollees tended to be older on average and have more chronic conditions than non-FIDE plan enrollees, persisted among excluded FIDE and non-FIDE plan enrollees.

Our supplementary analyses show differences compared to the main analyses (Figure 1). When restricting our sample to Medicare Advantage contracts with low missing data, FIDE plan enrollees showed an 11 percentage point increase in the use of HCBS (95% CI: 3.3, 18.7) and a 3.8 percentage point increase in the use of long-term nursing facility services (95% CI: 0.9, 6.6) compared to non-FIDE plan enrollees (Supplemental Tables S9 and S10). Among those with Alzheimer's disease and related dementias, FIDE plan enrollees had a 9 percentage point increase in the use of HCBS (95% CI: 2.2, 15.8) and an 11.0 percentage points increase in the use of long-term nursing facility services (95% CI: 1.1, 20.9) (Supplemental Tables S11 and S12). Among those who used HCBS at the

**TABLE 3** Association between Medicare Advantage D-SNP plan type and healthcare utilization among dual-eligible individuals at least 65 years of age who were hospitalized in 2018.

| | FIDE | Non-FIDE | |
|---|---|---|---|
| **Outcomes** | **Adjusted percentage (95% CI)** | **Adjusted percentage (95% CI)** | **Adjusted difference[a] (95% CI)** |
| Discharge to home (vs PAC) | 77.0 (74.0, 81.0) | 77.0 (76.0, 79.0) | −0.3 (−5.4, 4.8) |
| 30-day readmission | 17.1 (16.6, 17.6) | 17.4 (17.2, 17.7) | −0.3 (−1.1, 0.4) |
| | **Adjusted mean (95% CI)** | **Adjusted mean (95% CI)** | **Adjusted difference[a] (95% CI)** |
| Length of hospital stay (days) | 6.7 (6.6, 6.8) | 6.64 (6.57, 6.71) | 0.1 (−0.2, 0.3) |

*Note*: Estimates were adjusted for variables in Exhibit 1 as well as county fixed effects and were weighted by covariate balance propensity score weights.

[a] Adjusted absolute difference in outcome between FIDE and non-FIDE enrollees; a positive number indicates the outcome is greater among FIDE enrollees compared to non-FIDE enrollees.

*Source*: Authors' analyses of Medicare Advantage and Medicaid data, 2018.

beginning of 2018 (Supplemental Table S13 provides characteristics of these HCBS users vs the rest in our sample), FIDE plan enrollees had 6.0 fewer hospitalizations per 1000 person-months (95% CI: −7.9, −4.0) and were 7.0 percentage points more likely to be discharged to home instead of institutional post-acute care (95% CI: 2.6, 11.5; Supplemental Tables S14 and S15). Lastly, among community-dwelling beneficiaries with high needs, FIDE plan enrollees had 12.1 fewer hospitalizations per 1000 person-months (95% CI: −19.2, −5.1; Supplemental Tables S16 and S17).

## DISCUSSION

Using Medicare Advantage encounters and Medicaid claims in 2018, we compared healthcare utilization between enrollees of FIDE and non-FIDE plans across six states. While our primary analyses showed no significant differences in healthcare utilization between FIDE and non-FIDE plan enrollees, subgroup analyses showed some differences in healthcare utilization between the two groups.

Our analysis builds on previous studies that investigated outcomes associated with FIDE plan enrollment. For instance, Anderson et al. found that dually eligible individuals enrolled in FIDE plans in Minnesota during 2010–2012 experienced fewer hospitalizations and ED visits, as well as increased use of HCBS compared to those enrolled in non-integrated Medicaid managed care plans.[25] Feng et al., using nationwide Medicare Advantage data, reported higher rates of hospitalizations and ED visits as well as increased use of HCBS and decreased use of nursing facility service for individuals enrolled in FIDE plans, compared to those in regular Medicare Advantage plans.[26] However, their data was limited to 2015, a period during which Medicare Advantage encounter data were highly incomplete.[22,23] A study by Meyers et al.[27] analyzed survey data from 2015 to 2018, focusing on patient experiences with care, and reported higher plan ratings and healthcare quality ratings among FIDE plan enrollees than non-FIDE plan enrollees. Lastly, Roberts et al.[28] analyzed a FIDE plan run by UPMC using data from 2015 to 2020, and found increased use of HCBS use among FIDE plan enrollees. As far as we are aware, no studies to date have compared healthcare utilization between enrollees in FIDE plan and other D-SNPs (non-FIDE plans in our study), using recent claims encompassing multiple states.

In our main analysis, which included all dually eligible individuals, we found no significant differences in healthcare utilization between FIDE and non-FIDE plan enrollees. However, subgroup analyses revealed nuanced distinctions. For example, our analysis of HCBS users indicated lower hospitalization rates and a higher likelihood of home discharge among FIDE plan enrollees. Similarly, an analysis focusing on community-dwelling beneficiaries with high needs (defined as HCBS users with recent hospitalization and post-acute care in the prior 12 months, alongside two or more chronic conditions) also indicated reduced hospitalization rates among FIDE plan enrollees. Additionally, our analysis of people with Alzheimer's disease and related dementias suggested a higher likelihood of HCBS and long-term nursing facility service use among FIDE plan enrollees.

These findings collectively suggest that FIDE plans may improve care coordination for specific subsets of dually eligible individuals, such as HCBS users. HCBS users often require a Medicaid nursing facility level of care but reside in home or community settings. Additionally, HCBS users represent a subset of dually eligible individuals who actively use Medicaid services, distinguishing them from those who rely on Medicaid services solely for Medicare cost-sharing. It is possible that HCBS users represent the population where FIDE plans are most able to optimize care coordination due to their care needs, living arrangements, and active use of Medicaid services.

Interestingly, upon further narrowing the HCBS sample to users with even greater needs (community-dwelling beneficiaries with high needs), we did not observe a higher likelihood of home discharge among FIDE plan enrollees, in contrast to the broader HCBS user population. This underscores the need for additional research to understand how FIDE plans coordinate care for specific subsets of dually eligible individuals, which could help policymakers identify successful elements of care integration programs.

Other factors not examined in this analysis could impact the effectiveness of FIDE plans. First, while having a single entity manage Medicare and Medicaid spending for the same individuals incentivizes FIDE plans to deliver cost-effective care, the translation of these incentives into actual care coordination may vary across plans. Factors such as FIDE plans' prior experience with Medicaid managed care, carve-outs for behavioral health services, provider networks, and organizational culture can all influence their ability to coordinate care for dually eligible individuals. Second, significant state-level differences may exist, including care coordination requirements specified in contracts between FIDE/non-FIDE plans and each state's Medicaid agency. In summary, our estimates of average effects across all FIDE plans in the main analyses may have obscured important plan and state-level differences that could affect care coordination. This underscores the need for further investigation to identify key factors linked to the success of FIDE plans in improving care integration.

Our study focused on the year 2018. However, standards for care integration for FIDE and non-FIDE plans have continued to evolve.[29] In 2018, federal mandates stipulated that if a single insurance company offered both D-SNP and Medicaid managed care plans, that particular D-SNP could become a FIDE plan. However, FIDE enrollees were not required to receive Medicaid benefits from an aligned Medicaid managed care plan offered by the same parent company. Starting in 2025, CMS will restrict FIDE plan enrollment to beneficiaries with aligned Medicaid plans (i.e., Medicaid managed care plans offered by the same insurance company), a practice known as exclusive aligned enrollment.[30] Plans serving beneficiaries with non-aligned Medicaid plans or only providing partial coverage for

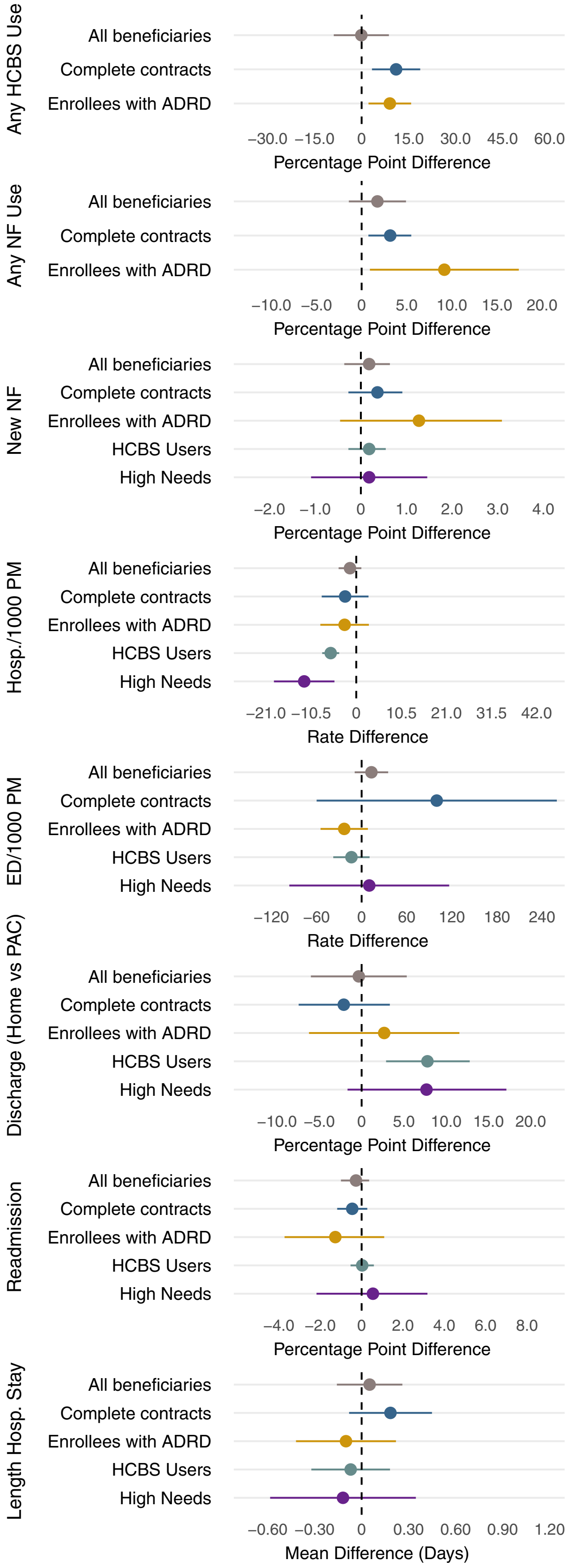

FIGURE 1 Association between Medicare Advantage D-SNP plan type and healthcare utilization: supplementary analyses, 2018. Estimates were adjusted for variables in Table 1 as well as county fixed effects and were weighted by covariate balance propensity score weights. Outcome differences are adjusted absolute difference in outcome between FIDE and non-FIDE enrollees; a positive number indicates the outcome is greater among FIDE enrollees compared to non-FIDE enrollees. ED, emergency department visits; HCBS, home- and community-based services; Hosp, hospitalizations; NF, nursing facility; PAC, institutional post-acute care; PM: person-months. *Source*: Authors' analyses of Medicare Advantage and Medicaid data, 2018.

Medicaid long-term care and behavioral health spending will be designated as highly integrated D-SNPs (HIDE plans). While we could not determine whether our outcomes would differ if all FIDE plans in our study had been exclusively aligned plans, our analyses do reflect a common situation in which D-SNPs include a mix of aligned plans and non-aligned plans. Even after the 2025 CMS changes take effect, a mix of aligned (FIDE) and non-aligned (HIDE) D-SNPs is likely to remain common.[9]

Furthermore, it is crucial to acknowledge that, in addition to FIDE plans, two other care integration programs for dually eligible individuals exist: Program of All-Inclusive Care for the Elderly (PACE) and Financial Alignment Model (FAI). PACE offers care integration, centering around adult day care centers, for dually eligible individuals eligible for nursing facility care while residing in the community. Notably, PACE has been associated with decreased hospitalizations.[31] However, PACE participation remains limited, with only 55,000 participants nationwide in 2021.[5] FAI, established in 2011, includes managed fee-for-service and capitated models[32] and provided care integration for about 270,000 dually eligible individuals at least 65 years of age in seven states in 2023.[33] The performance of FAI capitated model has been reported as mixed,[34–39] while its managed fee-for-service model (only in Washington) has demonstrated savings in Medicare spending and reductions in skilled nursing and long-term nursing facility use.[40] As far as we know, only one study has compared one of these care integration models with FIDE plans,[26] highlighting the need for additional research to assess the effectiveness across care integration models.

FIDE and non-FIDE plan enrollees in our sample exhibited different characteristics. We used propensity score weighting to adjust for such differences between FIDE and non-FIDE plan enrollees within the same county. However, it is still possible that unobservable differences could bias our results, which should be considered when interpreting our findings. Other limitations of our study include a small sample size that may have restricted our ability to detect differences in healthcare utilization between FIDE and non-FIDE plan enrollees, particularly within our subgroup analyses. Additionally, our main data source—claims—lacks information about key domains of quality, including measures of patient experience or care satisfaction. Lastly, FIDE plan enrollees in our sample accounted for approximately 20% of the total FIDE plan enrollees in 2018, and our findings may not generalize to all FIDE plan enrollees.

# CONCLUSION

We observed no significant differences in healthcare utilization between FIDE and non-FIDE plan enrollees during the year 2018. However, when we conducted subgroup analyses, we identified some differences in healthcare utilization between the two groups. These findings suggest that FIDE plans may have improved care integration for specific subsets of dually eligible individuals.

## AUTHOR CONTRIBUTIONS

*Study concept and design*: All authors. *Acquisition of data*: Hyunjee Kim, Angela Senders, Erika Simeon, and Clint Sergi. *Analysis and interpretation of data*: All authors. Preparation of manuscript: all authors.

## CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

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## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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