Environmental Scan on Addressing the Needs of Patients with Complex Chronic Conditions or Serious Illnesses in Population-Based Total Cost of Care (PB-TCOC) Models

June 4, 2024

This environmental scan was prepared at the request of the Office of the Assistant Secretary for Planning and Evaluation (ASPE) as background information to assist the Physician-Focused Payment Model Technical Advisory Committee (PTAC) in preparing for a theme-based discussion on addressing the needs of patients with complex chronic conditions or serious illnesses in population-based total cost of care (PB-TCOC) models. This environmental scan provides an overview of high-cost patients (e.g., defining complex chronic conditions and serious illnesses, characteristics of these patients, and methods for prospectively identifying patients); addresses care delivery approaches and challenges (e.g., integration with specialty care, care coordination, and health-related social needs [HRSN]); and discusses payment model participation challenges and lessons learned (e.g., financial incentives, performance measures, and modifications to risk adjustment or benchmarking for patients with complex chronic conditions or serious illnesses). Appendices include additional definitions of complex chronic conditions and serious illnesses and tables detailing features of selected Center for Medicare and Medicaid Innovation (CMMI or the Innovation Center) models, submitted PTAC proposals, and other Centers for Medicare & Medicaid Services (CMS), Medicaid, or commercial programs.[i]

Table of Contents

List of Exhibits

List of Acronyms

AAFP	American Academy of Family Physicians
ACG	Adjusted clinical groups
ACM	Advanced Care Model
ACO	Accountable Care Organization
ACO REACH	Accountable Care Organization Realizing Equity, Access, and Community Health
ACSC	Ambulatory care sensitive conditions
ADI	Area Deprivation Index
AHRQ	Agency for Healthcare Research and Quality
AMA	American Medical Association
APM	Alternative Payment Model
ASPE	Assistant Secretary for Planning and Evaluation
CAHPS	Consumer Assessment of Healthcare Providers and Systems
CBO	Community based organizations
CCC	Chronic condition count
CCD	Complex chronic disease
CCI	Charlson Comorbidity Index
CCM	Chronic care management
CCP	Coordinated care plan
CDC	Centers for Disease Control and Prevention
CHIP	Children's Health Insurance Program
CHW	Community health workers
CJR	Comprehensive Joint Replacement
CKD	Chronic kidney disease
CMMI	Center for Medicare and Medicaid Innovation
CMS	Centers for Medicare & Medicaid Services
CPC	Comprehensive Primary Care
C-SNP	Chronic Conditions Special Needs Plan
C-TAC	Coalition to Transform Advanced Care
ED	Emergency department
EHR	Electronic health record
ESRD	End-stage renal disease
FFS	Fee-for-service
FMAP	Federal Medical Assistance Percentage
FTE	Full-time equivalent
GAO	Government Accountability Office
GUIDE	Guiding an Improved Dementia Experience
HCC	Hierarchical condition categories
HCV	Hepatitis C Virus
HHS	Health and Human Services
HIT	Health information technology
HMH	Hackensack Meridian Health
HMO	Health maintenance organization
HRSN	Health-related social need
IAHPC	International Association for Hospice and Palliative Care

KCC	Kidney Care Choices
LVC	Low-value care
MA	Medicare Advantage
MACRA	Medicare Access and Children's Health Insurance Program Reauthorization Act
MAO	Medicare Advantage Organization
MA VBID	Medicare Advantage Value-Based Insurance Design
MCC	Multiple chronic conditions
MCCM	Medicare Care Choices Model
MDPP	Medicare Diabetes Prevention Program
MD-TCOC	Maryland Total Cost of Care
MIPS	Merit-Based Incentive Payment System
MSSP	Medicare Shared Savings Program
NCHS	National Center for Health Statistics
NCI	National Cancer Institute
NCQA	National Committee for Quality Assurance
NIH	National Institutes of Health
NQF	National Quality Forum
NYC DOHMH	New York City Department of Health and Mental Hygiene
PAM	Patient Activation Measure
PBP	Plan benefit package
PBPM	Per-beneficiary-per-month
PB-TCOC	Population-based total cost of care
PCDT	Preliminary Comments Development Team
PCF	Primary Care First
PCP	Primary care physician
PCT	Palliative care team
PFPM	Physician-focused payment model
PPO	Preferred provider organization
PQI	Prevention quality indicator
PROM	Patient-reported outcome measure
PRT	Preliminary Review Team
PTAC	Physician-Focused Payment Model Technical Advisory Committee
RFI	Request for Input
RPA	Renal Physicians Association
RTS	Report to the Secretary
SES	Socioeconomic status
SME	Subject matter expert
SNK	Skilled nursing facility
TCM	Transitional care management
U.S.	United States
VA	Veterans Affairs
WHO	World Health Organization

I. Introduction and Purpose

Under the bipartisan Medicare Access and Children's Health Insurance Program (CHIP) Reauthorization Act (MACRA) of 2015, Congress significantly changed Medicare fee-for-service (FFS) physician payment methods. The law also specifically encouraged the development of Alternative Payment Models (APMs) known as physician-focused payment models (PFPMs) and created the Physician-Focused Payment Model Technical Advisory Committee (PTAC) to review stakeholder-submitted PFPM proposals and make comments and recommendations on them to the Secretary of Health and Human Services (HHS; "the Secretary").

Since its inception, PTAC has received 35 proposals for PFPMs from a diverse set of physician payment stakeholders, including professional associations, health systems, academic groups, public health agencies, and individual providers.[ii] PTAC evaluates the PFPM proposals based on the extent to which they meet the Secretary's 10 regulatory criteria for PFPMs (specified in federal regulations at 42 CFR § 414.1465). Several of the 10 criteria for proposed PFPMs that PTAC uses to evaluate stakeholder-submitted proposals are pertinent to addressing the needs of patients with complex chronic conditions or serious illnesses in population-based models.

Given the increased emphasis on developing larger, population-based APMs that encourage accountable care relationships, PTAC has conducted a series of theme-based discussions between 2022 and early 2024 that have examined care delivery and payment issues as they relate to population-based total cost of care (PB-TCOC) models. A key theme that has emerged during these theme-based discussions relates to the importance of improving care for patients with complex chronic conditions or serious illnesses. Additionally, several previous submitters have included components related to addressing the needs of patients with complex chronic conditions or serious illnesses as part of their proposed models.

Relevant topics identified for investigation in this environmental scan include:

- Characteristics of patients with complex chronic conditions or serious illnesses, including approaches to identifying these high-cost patients;
- Care delivery challenges and approaches, including integration with specialty care, care coordination, and addressing health-related social needs (HRSN); and
- Payment model participation challenges and lessons learned, including performance measurement and financial incentives.

This environmental scan provides PTAC members with background information and context reflecting expert perspectives on issues related to addressing the needs of patients with complex chronic conditions or serious illnesses in PB-TCOC models. The environmental scan is expected to help PTAC members review strategies in proposals previously submitted to the Committee. In addition, the environmental scan can inform the Committee's review of future proposals and future comments and

---

[ii] The 35 proposals submitted to PTAC represent an unduplicated count (i.e., proposals with multiple submissions are counted only once) of the number of proposals that have been voted and deliberated on by the Committee (28) and the number of proposals that have been withdrawn by stakeholders (seven, including one proposal that was withdrawn prior to any review by the Committee).

recommendations that Committee members may submit to the Secretary relating to improving care for patients with complex chronic conditions or serious illnesses in population-based models.

This environmental scan also summarizes relevant information from PTAC's review of proposals from previous submitters and findings from relevant literature, selected Center for Medicare and Medicaid Innovation (CMMI) models, and other Centers for Medicare & Medicaid Services (CMS) programs, state models, and demonstrations.

Section II provides key highlights of the findings from the environmental scan. Section III describes the research questions and methods used in the environmental scan. Subsequent sections provide an overview of high-cost patients (Section IV), care delivery challenges and approaches (Section V), payment model participation challenges and lessons learned (Section VI), and areas where additional information is needed (Section VII). Additionally, a list of abbreviations can be found at the beginning of the environmental scan, following the Table of Contents.

II. Key Highlights

The following section provides important definitions and highlights key findings from this environmental scan on addressing the needs of patients with complex chronic conditions or serious illnesses in PB-TCOC models.

II.A. Definitions

There is no consensus on the definitions that may be used for identifying patients with complex chronic conditions or serious illnesses. Definitions vary regarding the number and types of conditions, severity, and duration of illness.

During several of PTAC's previous theme-based discussions, Committee members have noted that a small proportion of Medicare beneficiaries account for a large proportion of Medicare fee-for-service (FFS) spending. For example, 5 percent of beneficiaries accounted for 44% of FFS spending in 2020.[1] Therefore, it is important to be able to identify these patients and develop effective care delivery models for addressing their needs within the context of PB-TCOC models.

Within this context, PTAC has developed the following working definitions for patients with complex chronic conditions or serious illnesses:

- **Patients with complex chronic conditions** are those with more than one morbidity, chronic condition and/or comorbidity (lasting 12 months or more) who usually require a high complexity of treatment involving multiple health care providers across different specialties and settings.
- **Patients with serious illnesses** are patients with advanced illness and patients who are in their last years of life.
- *In addition to their chronic medical conditions, these patients may also experience acute events that can affect their health care needs.*

Additional examples of definitions of complex chronic conditions or serious illnesses are included in **Appendix B.**

II.B. Key Findings

Below are highlights of the key findings from the different sections covered in this environmental scan.

Background on High-Cost Patients

The majority of Medicare spending is associated with a a relatively small group of beneficiaries.[2] These high-cost patients are disproportionately non-White, dually eligible for Medicare and Medicaid, and socially vulnerable.[3,4] Patients with complex chronic conditions or serious illnesses are two key clinical segments of high-cost patients.[5] Another clinical segment involves patients who experience a one-time catastrophic health event. Beyond clinical diagnosis, patient complexity is important to consider in identifying these high-needs, high-cost patients.[6] Factors such as functional limitations and socioeconomic conditions influence whether patients will be high-cost during a given year, and whether patients are likely to be persistently high-cost.[7,8]

Care Delivery Challenges and Approaches

Patients with complex chronic conditions or serious illnesses tend to see multiple providers and require care over long periods of time. As a result, providers face special challenges when delivering high-quality, cost-effective care to these patient populations. For example, although primary care physicians (PCPs) are often best situated to manage care for patients with complex chronic conditions or serious illnesses, reimbursement rates to PCPs for Medicare-funded chronic care management (CCM) services are low in comparison with the costs of implementing CCM services.[9] Further, limited interoperability of electronic health records creates challenges related to care coordination for this patient population. Providers have identified several care delivery challenges specific to patients with complex chronic conditions or serious illnesses, including challenges related to PCPs' roles in managing and coordinating care, challenges with integrating specialty care, challenges associated with care coordination, and challenges with care delivery due to HRSNs.

Payment Model Participation Challenges and Lessons Learned

Providers who care for patients with complex chronic conditions or serious illnesses may face challenges in participating in Alternative Payment Models. Existing approaches to provider attribution, benchmarking, and risk adjustment methods may need to be modified for patients with complex chronic conditions or serious illnesses relative to other patients. For example, population-based payment models allow patients to be attributed to specialists who can better coordinate patient care.[10] Additionally, approaches where patients are attributed to a team of providers may better capture care relationships for this patient population. Many of the existing provider payment methods do not reward coordinated, team-based care approaches and do not reimburse services provided by non-physicians. Finally, experts note the importance of measuring health care outcomes for this patient population, given the likelihood that this patient population results in more negative outcomes compared to the general population.

Relevant Features in Previously Submitted PTAC Proposals

Among the 35 proposals that were submitted to PTAC between 2016 and 2020, thirteen proposals included components related to addressing the needs of patients with complex chronic conditions and/or serious illnesses. The Committee found that seven of these proposals met Criterion 7

(Integration and Care Coordination), which is one of the 10 criteria that the Secretary of Health and Human Services (HHS) has established for proposed PFPMs. Two of these proposals focused on increasing access to palliative care, and the other three proposals focused on condition-specific approaches for improving care delivery.

III. Research Approach

This section provides a brief review of the research questions and methods that were used in developing this environmental scan.

III.A. Research Questions

Working closely with the Office of the Assistant Secretary for Planning and Evaluation (ASPE) staff and with input from a subset of Committee members known as a Preliminary Comments Development Team (PCDT),[iii] the following high-level research questions were developed to inform this environmental scan:

- How are/should patients with complex chronic conditions and/or serious illnesses be defined?
- How are patients with complex chronic conditions and/or serious illnesses prospectively identified by payers, Accountable Care Organizations (ACOs), and providers?
- What are the major challenges that affect patients with complex chronic conditions and/or serious illnesses?
- What are challenges associated with identifying and caring for patients with complex chronic conditions and/or serious illnesses?
- Are there major barriers associated with patients with complex chronic conditions and/or serious illnesses participating in APMs? If so, what are these barriers?
- Are there major barriers associated with participation and engagement in APMs from providers serving patients with complex chronic conditions and/or serious illnesses? If so, what are they?
- What are current care delivery approaches for patients with complex chronic conditions and/or serious illnesses?
- Are additional or innovative efforts to improve care coordination needed for patients with complex chronic conditions and/or serious illnesses, compared to a more general patient population? If so, what efforts may be most effective at improving care coordination for patients with complex chronic conditions and/or serious illnesses?
- What types of performance measures should be used for providers treating patients with complex chronic conditions and/or serious illnesses in TCOC models?
- What challenges exist related to developing effective payment models for addressing patients with complex chronic conditions and/or serious illnesses?
- What are examples of APMs, including CMMI models (e.g., Medicare Care Choices Model [MCCM], Medicare Advantage [MA] Value-Based Insurance Design [VBID] Model), that include or focus on patients with complex chronic conditions and/or serious illnesses?
- What are examples of other CMS programs that include or focus on patients with complex chronic conditions and/or serious illnesses (e.g., Chronic Condition Special Needs Plans)?

[iii] A Preliminary Comments Development Team (PCDT) comprised four PTAC members: Walter Lin, MD, MBA (Lead); Lindsay K. Botsford, MD, MBA; Lawrence R. Kosinski, MD, MBA; and Terry Mills Jr., MD, MMM.

- What are examples of previously submitted PTAC proposals that include or focus on patients with complex chronic conditions and/or serious illnesses?
- What are examples of Medicaid programs that have been effective in improving care delivery and performance outcomes for patients with complex chronic conditions and/or serious illnesses?
- What are examples of commercial plans that have been effective in improving care delivery and performance outcomes for patients with complex chronic conditions and/or serious illnesses?

These primary research questions along with secondary research questions, organized by the environmental scan section, are provided in **Appendix A.**

III.B. Research Methods

The environmental scan included information gathered from a targeted review of the literature, an analysis of selected previous PTAC proposals, and an analysis of selected value-based CMS programs and CMMI models.

This environmental scan was specifically focused on three pertinent topics (overview of high-cost patients with complex chronic conditions or serious illnesses, care delivery challenges and approaches, and payment model participation challenges and lessons learned) and selected resources most relevant to these topics, and the research questions were reviewed.

The analysis of selected PTAC proposals (**Appendix D**) included a review of previously submitted proposals, PTAC reports to the Secretary, and content available in other documents related to the PTAC proposal review process documents (e.g., public meeting minutes, Preliminary Review Team [PRT] reports).

The analysis of selected CMMI models (**Appendix C**) and CMS programs (**Appendix E**) was based on a review of publicly available resources, including the description of and technical documents related to each selected program on CMS websites, descriptions on the CMMI website, and recent CMMI model evaluation reports when available.

IV. Background on High-Cost Patients

To aid in development of value-based APMs—that is, models aimed at increasing quality while maintaining or reducing health care costs—it is necessary to understand the characteristics of patients who have the most health care needs, use the most health care services and incur the most costs. Analyses of Medicare claims data reveal that this relationship follows a Pareto distribution, whereby the majority of health care spending is incurred by a small proportion of Medicare beneficiaries.[11,12] For example, in 2020, nearly half (44 percent) of Medicare FFS spending is accounted for by only five percent of beneficiaries, and nearly two-thirds (62 percent) of FFS spending is incurred by just 10 percent of beneficiaries.[13]

IV.A. Types of High-Cost Patients

A Kaiser Permanente analysis of the most expensive five percent of patients revealed three heterogeneous groups, each constituting about one-third of high-cost patients: 1) those with one-time catastrophic events (e.g., a major trauma or acute cancer); 2) those with chronic conditions that can be

controlled (such as diabetes or stable heart failure); and 3) those with serious medical conditions that require ongoing, expensive treatment (such as serious heart failure).[14] Although not limited to the Medicare population, the Kaiser Permanente taxonomy aligns with findings from studies of high-cost Medicare beneficiaries.[15,16] Moreover, these three high-cost health status groups provide a framework for understanding where APMs may be able to have the most impact on health care costs. For example, focusing on improving care using disease management programs that help patients with multiple chronic conditions manage these conditions and maintain their health may lead to substantial cost savings.[17] In contrast, those with serious illnesses tend to require expensive, ongoing treatment each year, with limited opportunity to achieve cost savings, unless or until those patients transition to palliative or hospice care.[18]

Exhibit 1 identifies three types of high-cost Medicare beneficiaries that may be of particular interest for PB-TCOC models that are seeking to improve outcomes, quality, and care for this patient population.

Exhibit 1. Relationship Between High-Cost Beneficiaries and Those with Complex Chronic Conditions or Serious Illnesses
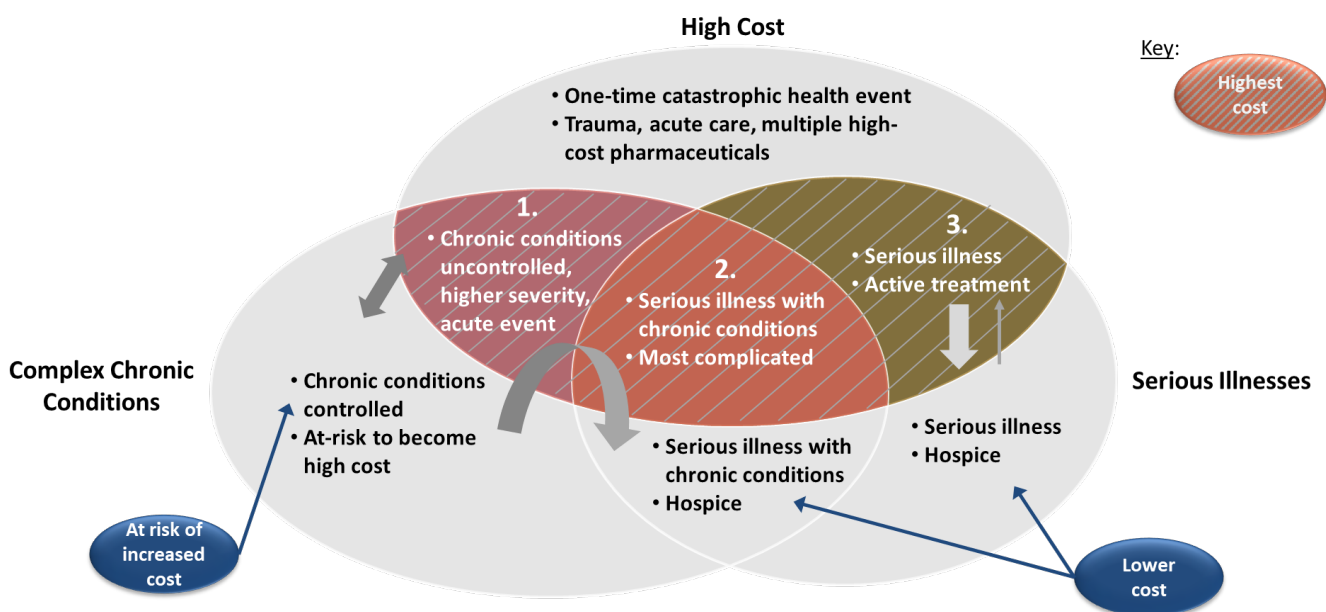
Source: ASPE PTAC June Preliminary Comments Development Team Findings Presentation, June 2024

IV.B. Characteristics of High-Cost Patients

The small group of high-cost beneficiaries, who are heavy users (or "super-utilizers") of health care services, are disproportionately male, non-White, socially vulnerable, dually eligible for Medicare and Medicaid, and either among the youngest (disabled or with end-stage renal disease [ESRD]) or oldest (frail) beneficiaries.[19,20,21,22] Clinically, high-cost beneficiaries share some characteristics, including having multiple chronic conditions, acute disease exacerbations, and serious illnesses (physical diseases, as well as mental health and substance use disorders).[23,24] Johnson et al. (2015) identified six groups of super-utilizers of health care services: terminal cancer patients, recipients of emergency inpatient

dialysis, trauma patients, individuals with serious mental health diagnoses, orthopedic surgery patients (not trauma-related), and patients with multiple chronic diseases.[25] A recent analysis by ASPE and Acumen, LLC has found that Medicare FFS beneficiaries with the highest spending had a higher mortality rate, higher proportion of Black, non-Hispanic beneficiaries, a higher proportion of dual eligible, and a higher number of chronic conditions when compared with the overall FFS total in 2021 (see Exhibit 2).

Exhibit 2. Selected Characteristics of Medicare FFS Beneficiaries with the Highest Spending, 2021

	FFS	Top 5%	Top 6-10%	
Mortality Rate (in CY)	**4%**	**22%**	**17%**	**Mortality Rate:** Significantly higher mortality rate for beneficiaries in top spending categories as compared to overall Medicare FFS
White	77%	76%	81%	**Black, Non-Hispanic**: Higher proportion in the top 5% of beneficiaries compared to overall FFS
Black	**8%**	**12%**	**9%**	
Other	1%	1%	1%	
Asian	3%	3%	2%	**Duals:** Disproportionately high share in top spending categories as compared to overall FFS.
Hispanic	7%	7%	5%	
Native American	1%	1%	1%	
Unknown	2%	1%	1%	**Chronic Conditions**: On average beneficiaries in accounting for the top 5% of spending had 8 chronic conditions as compared to 3 chronic conditions for beneficiaries in overall Medicare FFS.
Dual	**13%**	**31%**	**25%**	
Male	47%	49%	45%	
Chronic Condition count	**3.0**	**8.0**	**6.9**	

* White, Black, Other, Asian, Native and Unknown
exclude Hispanic.   Based on PTAC Commissioned Work - Analysis by ASPE and Acumen LLC

IV.C. Identifying the Complexity of Patients with Complex Chronic Conditions or Serious Illnesses

There is no consensus on the definitions that may be used for identifying patients with complex chronic conditions or serious illnesses. Definitions vary regarding the number and types of conditions, severity, and duration of illness. This can contribute to the difficulty in prospectively identifying the most high-risk patients in PB-TCOC models.

The Centers for Disease Control and Prevention (CDC) describes chronic diseases as "conditions that last 1 year or more and require ongoing medical attention or limit activities of daily living or both."[26] Chronic conditions, such as diabetes, heart disease, and chronic lung disease, are extremely common among those aged 65 years and older, with more than two-thirds of Medicare beneficiaries having at least two chronic conditions, and more than a third of beneficiaries having four or more chronic conditions.[27]

However, the number of chronic conditions alone may not reflect the complexity—that is, the resources and costs—required to care for these patients. Sevick et al. (2007) defined a complex chronic disease as "a condition involving multiple morbidities, that requires the attention of multiple health care providers or facilities and possibly community (home)-based care."[28] Complexity for those with multiple chronic conditions also may be related to the number of medications taken. Most adults aged 60–79 years (84 percent) take at least one prescription drug; more than one-third (35 percent) take five or more prescription drugs.[29] Polypharmacy increases the likelihood that patients may experience drug interactions, oversedation, and adverse drug events, all of which could lead to injury, hospitalization,

and expensive medical treatment.[30] **Appendix B** provides additional definitions of complex chronic conditions identified in the literature. PTAC has developed the following working definition of patients with complex chronic conditions:

- Patients with more than one morbidity, chronic condition, and/or comorbidity (lasting 12 months or more) who usually require a high complexity of treatment involving multiple health care providers across various specialties and settings.

Kelley et al. (2018) define serious illness as "a health condition that carries a high risk of mortality AND either negatively impacts a person's daily function or quality of life, OR excessively strains their caregivers."[31] Many agencies and organizations use this definition, including CMS, the National Committee for Quality Assurance (NCQA), and the Center to Advance Palliative Care. **Appendix B** provides additional definitions of serious illnesses identified in the literature. PTAC has developed the following working definition of patients with serious illnesses:

- Patients with advanced illness and patients who are in their last years of life.

Additionally, PTAC has noted that:

- In addition to their chronic medical conditions, these patients [with complex chronic conditions or serious illnesses] may also experience acute events that can affect their health care needs.

IV.D. Cost Variation among High-Cost Patients

Health care costs vary extensively among patients with complex chronic conditions or serious illnesses. One factor affecting this cost variation is the condition itself. For example, in their study of super-utilizers of health care, Johnson et al. (2015) found that average annual per-person costs ranged from $87,000 among those with serious mental health diagnoses to nearly $400,000 among those receiving emergency inpatient dialysis.[32] A second important factor in cost variation is whether the person has functional limitations, such as needing assistance bathing, dressing, or preparing food. Hayes et al. (2016) found that, among adults with three or more chronic conditions, those who also had functional limitations had significantly higher health care spending than did those without functional limitations.[33]

A third factor influencing patients' health care costs is the trajectory or stage of disease. For those with chronic conditions, costs are typically lower when the patient's conditions are well-managed or controlled versus when their conditions are poorly managed and/or marked by acute exacerbations, which may require emergency department or hospital care.[34] Among patients with serious illnesses, costs are likely to be high during the time when the patient is focused on active and aggressive treatment, but costs may decline as there is an increased focus on palliative care and ultimately hospice care.[35]

Although some health care costs are unavoidable, other spending is considered potentially preventable. Certain acute and chronic conditions, such as hypertension, diabetes, and congestive heart failure—collectively known as ambulatory care sensitive conditions (ACSCs)—may incur higher health care costs if they are not properly managed through primary care.[36] In 2017, an estimated 15.4 percent of hospital stays among Medicare patients were considered potentially preventable, accounting for $22.2 billion in Medicare costs.[37] Khullar et al. (2015) found that an estimated 72 percent of potentially preventable Medicare FFS spending occurs among high-cost beneficiaries (those in the top decile), with most of this

spending attributable to inpatient stays (58 percent), physician services (22 percent), and skilled nursing facilities (11 percent).[38] Moreover, 44 percent of high-cost beneficiaries had at least one potentially preventable event (preventable emergency department visit, preventable hospitalization, or unplanned readmission).[39]

APMs can help to shift incentives and encourage care delivery approaches that improve quality and reduce spending for patients who already are high-cost—including those with complex chronic conditions or serious illnesses—and/or prevent patients who are not currently high-cost from becoming high-cost. The at-risk group includes individuals who may develop complex chronic conditions or serious illnesses, or those who already have well-controlled chronic conditions but are at risk of acute exacerbations and advancement to more serious stages of disease. Both high-cost and at-risk patients can be challenging to identify. Moreover, the high-cost cohort can change over time. Indeed, Figueroa et al. (2019) found that just over one-fourth (28.1 percent) of Medicare beneficiaries remained in the top 10 percent most expensive beneficiaries for three consecutive years.[40]

IV.E. Identifying High-Cost Patients

Commonly used approaches for identifying high-risk patients involve stratifying patients into health risk categories based on clinical diagnoses, sometimes in conjunction with basic demographic characteristics such as age and sex.[41,42] For example, CMS' hierarchical condition categories (HCCs) and Johns Hopkins' adjusted clinical groups (ACGs) rely on clinical diagnosis codes and demographic data to predict future health care utilization. The Charlson Comorbidity Index (CCI) does not incorporate demographic data but instead calculates a weighted risk score based exclusively on the number and severity of comorbid conditions. Other risk-adjustment approaches, such as the chronic condition count (CCC), utilize only the number of chronic conditions or comorbidities to predict high-needs patients.

However, physicians have noted that such clinically-based algorithms are too simplistic. In interviews with primary care physicians, Loeb et al. (2015) found that physicians considered patients with chronic conditions to be complex if they had additional characteristics such as socioeconomic challenges or mental illness.[43] In one study, patients with less ability to manage their health and health care, as measured by the Patient Activation Measure (PAM), had a higher likelihood of being subsequently diagnosed with a chronic condition.[44] Kelley et al. (2016) used several prospective identification methods to classify adults aged 50 years and older with serious illnesses based on condition, functional impairment, and health care utilization.[45] Those who had a serious illness along with both functional limitations and a prior 12-month hospital admission had the highest Medicare costs in the following year. In another study, Medicare beneficiaries residing in the most socioeconomically disadvantaged neighborhoods, as measured by the Area Deprivation Index (ADI), had higher Medicare FFS costs in the following year compared with those living in non-disadvantaged neighborhoods.[46]

In one component of CMMI's Comprehensive Primary Care (CPC) initiative, practices risk stratified their patients to identify those with high-need conditions, such as complex chronic conditions or serious illnesses, that require additional care management support.[47] Practices were able to identify their own risk stratification method. These practices used four approaches: practice-developed score or algorithm (44 percent of practices), pre-existing clinical algorithm from the American Academy of Family Physicians (AAFP, 32 percent of practices), algorithm based on claims or electronic health record (EHR) data (15 percent of practices), or clinical intuition (11 percent of practices).[48] Those practices that used clinical intuition had the highest number and proportion of high-risk patients receiving care

management support per full-time-equivalent (FTE) physician. This suggests that some practices felt that a larger proportion of patients were at high risk using a qualitative approach that may have been more holistic and multi-faceted.

V. Care Delivery Challenges and Approaches

Despite a growing number of patients with complex chronic diseases in the United States,[49] current practice in typical inpatient and outpatient care delivery settings focuses on the diagnosis and treatment of acute conditions rather than complex chronic conditions.[50] Important differences exist between acute and chronic diseases, and these differences inform treatment approaches. For example, whereas acute illnesses tend to have a short onset and are short in duration, chronic diseases tend to develop slowly and last for long periods of time.[51] As a result, treatment for chronic conditions is typically focused on slowing the progression of the illness and, to the extent possible, reducing functional limitations due to the illness.[52] Further, these patients typically require multifaceted, longitudinal care from multiple providers across multiple settings. Due to the nature of chronic conditions or serious illness, there is a substantial burden placed on patients, as well as their family members and/or caregivers.[53] Providers serving patients with complex chronic conditions or serious illnesses face unique challenges when delivering high-quality, cost-effective care.

V.A. Role of Primary Care

PCPs are often best situated to manage care for patients with complex chronic conditions or serious illnesses because PCPs provide the majority of Medicare-funded CCM services.[54] CCM services include maintaining comprehensive electronic care plans, managing care transitions, and sharing patient health information. Less than 10 percent of CCM services are provided by specialty practitioners.[55] However, even among PCPs, adoption of Medicare's CCM codes has been low. On average, practices provide CCM services to less than 15 percent of eligible beneficiaries.[56]

PCPs face challenges when managing care for patients with complex chronic conditions or serious illnesses. One challenge faced by PCPs is low reimbursement rates for CCM services, which may not cover the costs to support CCM service delivery. To better incentivize provision of CCM services in primary care, CMS could increase the reimbursement rate for CCM codes.[57]

There is a dearth of clinical guidelines and recommendations for managing patients with multiple chronic conditions. As a result, providers tend to rely on single disease-specific guidelines when treating patients with multiple conditions.[58] Current guidelines focus on single diseases in part because the clinical trials on which they are based often exclude individuals with multiple chronic conditions.[59] Advising patients to follow all recommendations for all individual disease guidelines is unrealistic and suboptimal for patients with multiple chronic conditions. For example, a patient with multiple chronic conditions could be prescribed dozens of drugs, be advised to make numerous lifestyle modifications, and be expected to attend an unrealistic number of primary care, specialist, and intervention appointments for their various chronic conditions. Thus, clinical guidelines for managing multiple chronic conditions are needed. The guidelines could focus on common clusters of chronic conditions[60] and should identify the appropriate number and types of visits (and to which providers) to effectively manage the needs of patients with complex chronic conditions or serious illnesses.

Additional research shows that PCPs report not having adequate time to provide effective care for patients with complex chronic conditions or serious illnesses.[61] PCPs generally cannot provide effective care for these patient populations during standard 15-to-20-minute consultations.[62] Extended

consultation times are needed for these patients, as longer consultations have been associated with the provision of less prescribing, more preventative health advice, increased patient satisfaction,[63] and reduced provider stress.[64]

Further, patients receiving low-value care (LVC), health care services that a particular patient does not need or will not benefit from, continues to be an issue. LVC services explain two percent of overall health care spending per year ($76 to $101 billion) and 10 percent of wasteful or inefficient health care spending.[65] Many approaches to reduce LVC have been implemented with varying success. Verkerk et al. (2022) evaluated eight de-implementation projects (e.g., aimed at reducing LVC services) in the Netherlands from 2016 through 2018 and determined that the following approaches helped reduce LVC: educating providers on LVC and its potential harms; selecting "clinical champions" within the provider organization who frequently discuss LVC and offer support to colleagues; providing feedback to clinicians and comparing performance among peers; and educating patients on LVC.[66] Barriers to reducing LVC include the limited time providers have to communicate with patients (e.g., the time to explain to the patient the importance of checking their own skin to decrease follow-up doctor visits) and the potential decreased revenue to a provider or provider organization created by a FFS environment.[67]

V.B. Integration with Specialty Care

The integration of specialists into the care team is a core component of effectively caring for patients with complex chronic conditions or serious illnesses. Successful coordination between specialists and other care team members can lead to better patient outcomes.[68] However, the integration of specialists into the care team has proven difficult to achieve. A study on care coordination among PCPs caring for patients with chronic conditions showed that many PCPs felt dissatisfied with their efforts to co-manage care with specialists.[69] PCPs also reported difficulty accessing specialists.[70] Multiple studies have shown that patients undergoing cancer treatment report role confusion and poor communication between their PCPs and specialists. These challenges can lead patients to believe that their needs may be unmet and can lead to insufficient condition and treatment information being shared with patients.[71]

Opportunities exist for health systems to improve specialist integration into the care team and improve care coordination between specialists and other care team members. Defining PCPs and specialists' roles and responsibilities in coordinating care can improve provider satisfaction.[72] Virtual team models can successfully connect PCPs with specialists to discuss patients with complex chronic conditions, which can help to delineate providers' roles in the patients' care journeys and improve communication among providers.[73] Effective communication between specialists and PCPs minimizes the likelihood that patients receive conflicting information and instructions from different clinicians[74] and may lead to improved patient outcomes. PCPs who care for patients with chronic conditions and frequently share patient information with specialists tend to have lower patient emergency department (ED) use when compared with PCPs who share patient information less frequently with specialists.[75]

V.C. Care Coordination

Coordinating care for patients with complex chronic conditions or serious illnesses can be challenging because these patients typically see multiple providers who work in different settings. Furthermore, efforts to coordinate care are hindered by ambiguity about staff and provider roles,[76] limited interoperability of EHRs,[77] and low reimbursement rates for care management activities.[78] Fragmentation and poor care coordination can lead to an exacerbation of patients' conditions[79] and increase patient and caregiver burden. Poor clinical management of patients' complex care needs can

reduce patients' quality of life, increase out of pocket expenses, and lead to poorer symptom control.[80] It can also increase caregiver responsibility and stress.[81] These patients are at increased risk of receiving duplicate services, being given inconsistent treatment plans, and/or experiencing breaks in needed treatment, adverse drug interactions, avoidable hospitalizations, and costly care.[82,83] The possibility of adverse drug events can be especially high for older adults with multiple chronic conditions.[84] For additional information about challenges in care coordination, see PTAC's *Environmental Scan on Care Coordination in the Context of Alternative Payment Models (APMs) and Physician-Focused Payment Models (PFPMs).*

Because care delivery settings commonly operate independently within unintegrated silos, patients with complex chronic conditions or serious illnesses tend to experience fragmented care during transitions between care settings.[85] Patients transitioning from inpatient to post-acute or palliative care face additional care coordination challenges, in part due to differing clinical priorities and provider cultures. Preferences related to discharge documentation, medication and treatment plans, and communication styles often differ between inpatient and outpatient providers.[86] In addition, inpatient providers may lack an understanding of the post-acute and palliative care settings to which patients are discharged. Acute care providers may also view communication at discharge as lower priority in comparison to other job responsibilities.[87] While transitional care management (TCM) services were introduced in 2013 so that providers could assist patients during care transitions, an ASPE analysis using 2019 data showed that TCM services were not used frequently.[88] Challenges related to care transitions are discussed further in PTAC's *Environmental Scan on Improving Management of Care Transitions in Population-Based Models.*

Opportunities for APMs and PB-TCOC models to improve care coordination and address the needs of these patients include adopting a multidisciplinary, culturally competent, team-based care approach. Adopting a team-based approach to care that includes non-physician members, such as nurses, social workers, and community health workers, can improve care coordination and promote continuous care. Models should engage both patients and their families to manage the chronic conditions. In addition, improvements in health information technology (HIT) will allow providers timely access to and sharing of patient data.[89]

V.D. Health-Related Social Needs

The prevalence of complex chronic conditions or serious illnesses differs across populations, likely in part due to differences in care access.[90] Well-documented disparities in access to health care occur among populations with low socioeconomic status (SES),[91] racial and ethnic groups,[92] persons with disabilities,[93] and individuals living in rural areas.[94] Patients with complex chronic conditions or serious illnesses who face difficulty accessing care may experience a more rapid deterioration of their illnesses. Other needs and social risk factors, including health literacy,[95] social support,[96] housing conditions,[97] and food access,[98] can further challenge care delivery for patients with complex chronic conditions or serious illnesses. For example, limited health literacy can prevent patients with multiple chronic conditions from effectively self-managing their conditions.[99] HRSNs such as a unstable housing, not having access to nutritious food, and unreliable transportation may also increase the likelihood of patients developing additional or worsening existing conditions and illnesses.[100,101]

There are multiple challenges associated with integrating HRSNs into a health care strategy. Addressing HRSNs is an ongoing process for each beneficiary and can be a long-term commitment. An evaluation of CMMI's Accountable Health Communities model found that only one-third of beneficiaries who received

navigation services for HRSNs reported that any of their HRSNs were resolved after one year.[102] Choosing an appropriate screening tool to identify HSRNs for a given patient, ideally one that can integrate with existing systems, can be difficult, and patients may not be comfortable sharing data on potentially sensitive or stigmatized topics such as transportation and housing in a clinical setting.[103] Further, community-based organizations (CBOs) may not have adequate capacity to respond to increased demand for services or may not have efficient systems that can process and manage a large number of referrals. Research shows that financial investments are likely needed to increase capacity to address HRSNs in many areas.[104,105]

HHS created a strategic framework for multiple chronic conditions, which includes addressing disparities and emphasizes that programs and initiatives should be tailored to reduce differences in care access and health outcomes for patients with multiple chronic conditions.[106] Initiatives and programs should consider targeting populations with low health care access to improve equity of care for the patient population. The Pennsylvania Rural Health Model does this by specifically addressing the needs of rural communities,[107] a population that experiences high rates of multiple morbidity and limited health care access.[108] Interventions to address patients' HSRNs are especially critical to reduce such disparities.

Extending care beyond the clinical setting through partnerships with CBOs and services can address patients' non-medical needs.[109] Successful and sustainable programs to address HRSNs build strong ties and rely on close communication between providers and CBOs, knowledge of the HRSN landscape at the local level, awareness of current efforts to address HRSNs in the community, and community partnerships.[110,111] In recent years, CMS has released multiple iterations of guidance on best practices to address HRSNs through the existing Medicaid benefit structure.[112,113,114,115] State Medicaid agencies are encouraged to address HRSNs through sections 1915 and 1115 demonstrations, state plan amendments, and Medicaid managed care plans via "in lieu of" services. States can provide nutrition support, housing services, and case management, as well as other services on a case-by-case basis. In 2023, most states with Medicaid managed care had at least one managed care organization contracted to provide services related to HRSNs, either through screening, referrals, community health workers (CHWs), or partnerships with CBOs.[116]

Despite the effectiveness of community-based approaches to manage patients and deliver preventive care, services provided outside the health care delivery system are typically not reimbursed. APMs that invest a portion of savings in community-based programs and resources could improve these critical partnerships, potentially leading to long-term cost savings.[117] Further, to improve equity, PB-TCOC models must address patients' HRSNs in model design.[118] For example, models could provide funding for CHWs to connect patients to social services such as food stamps and transportation resources.[119]

V.E. Additional Opportunities to Improve Care Delivery

In addition to the opportunities to address care delivery challenges described in the preceding sections of this environmental scan, there are other services and alternative ways of delivering existing services to patients with complex chronic conditions or serious illnesses. Such approaches can improve care and reduce spending in APMs. Examples of these types of services include but are not limited to the following:

- Providing electronic consultations and telehealth visits with specialists, which are particularly useful for patients living in rural areas with shortages in the availability of specialists;
- Proactively monitoring patients' symptoms, which allows physicians to rapidly respond to exacerbations and reduce the need for ED visits and hospital admissions;
- Delivering home-based services to reduce the likelihood of hospitalizations and stays in skilled nursing facilities (SNFs); and
- Providing palliative care services to patients with advanced illnesses to help control the severity of symptoms and potentially reduce the need for expensive treatments that are not consistent with patients' goals.[120]

VI. Payment Model Participation Challenges and Lessons Learned

As described in the previous section, patients with complex chronic conditions or serious illnesses require multifaceted care from multiple providers, and providers often face unique challenges in delivering coordinated, high-quality, cost-effective care. Additionally, providers who care for this patient population may face challenges in participating in various payment models.

VI.A. Care Delivery Challenges and APM Participation Challenges

In addition to challenges related to care delivery for patients with complex chronic conditions or serious illnesses, providers delivering care to these patients face barriers themselves with participation and engagement in APMs. Patients with complex chronic conditions are typically integrated into APMs either as a population of interest within a broader population-based model framework (e.g., the High Needs ACOs in the ACO Realizing Equity, Access, and Community Health [REACH] model)[121] or within a disease-specific model that aims to address a specific population with a shared disease or medical condition (e.g., the Guiding an Improved Dementia Experience [GUIDE] model).[122]

In its 2021 Strategy Refresh, CMMI identified multiple barriers for provider participation in APMs, including the proliferation of APMs resulting in conflicting or opposing incentives for providers, the complexity of model design and payment structures, administrative burden, and the additional investments in infrastructure (e.g., EHR enhancements) needed to participate.[123] In 2022, CMMI released additional strategies to increase access to coordinated and integrated specialty care in population-based models, including: 1) improving performance data and data sharing between specialty and primary care providers; 2) aligning incentives between specialists and ACO initiatives; 3) developing models wherein a specialist assumes primary responsibility for beneficiaries with serious illnesses; and 4) integrating specialists into primary care delivery pathways (e.g., through use of billing codes).[124]

Additionally, in 2021, the Government Accountability Office (GAO) reported that it was challenging for providers in rural, provider shortage, or underserved areas to participate in APMs, which was also acknowledged by CMMI in its 2021 Strategy Refresh.[125] Challenges cited for these providers include a lack of available upfront funding for transitioning to an APM taking on financial risk; lack of adequate data analytics and HIT capabilities to accurately assess their performance; low capacity of already-overburdened staff to manage APM activities; and lack of models that meet the needs of patients in these areas. Smaller independent practices face additional barriers to APM participation, as they do not have access to the larger infrastructure networks and pooled resources that larger practices or medical centers typically do.[126]

VI.B. Attributing Beneficiaries to APMs

Patient attribution—the process of determining which provider is accountable for a patient's health care and costs—is an important part of population-based APMs. Attribution identifies the patient population for which the provider assumes financial responsibility. The experience of this population then serves as the basis for measuring performance of the provider, setting reporting requirements, and determining payment for the provider.[127] There are a variety of attribution methods used to identify the patient-provider relationship in APMs, and, as providers are responsible for outcomes for their attributed patients, the method used can affect performance measurement and reporting.[128] Although many attribution methods were designed specifically for primary care, the same attribution methods are commonly used for multispecialty and integrated care delivery systems.[129]

Attributing patients with complex chronic conditions or serious illnesses to a single primary care provider who is responsible for overseeing their care may not be the most appropriate method, as these patients tend to see multiple providers and require care over long periods of time.[130] Different provider attribution methods may be needed for patients with complex chronic conditions or serious illnesses compared with patients in the general population. For example, some population-based payment models allow patients to be attributed to specialists who can be at the center of care coordination, which may better serve patients with complex chronic conditions or serious illnesses.[131]

The timing of attribution also has implications for patients with complex chronic conditions or serious illnesses. Retrospective attribution, where providers are assigned responsibility for patients at the end of a performance year based on care received within that performance year, is able to capture acute exacerbations of chronic conditions and episodes of serious illnesses during a performance year and patients newly diagnosed with a serious illness or complex condition.[132] With prospective attribution, wherein patients are attributed to providers based on care received during a period leading up to the performance year, providers are more easily able to identify patients and provide targeted care to those patients.[133] But if a patient's care patterns change during the year (e.g., in response to an acute exacerbation of a chronic condition), they may not be attributed to the provider from whom they received the majority of their care in the year.[134]

Some insurance plans, such as health maintenance organizations (HMOs), use relatively simple attribution methods where patients choose a provider from a list when they enroll in the plan. However, this type of attribution method may not be best suited for patients with complex care needs, who may not have one physician designated as their primary physician.[135] In addition, HMOs often require patients to see a primary care physician for a referral every time the patient needs to visit a new specialist, which can increase patient burden for patients who see multiple specialists.[136] Other types of insurance plans such as preferred provider organizations (PPOs) may be associated with less burden for these patients, as PPOs do not require referrals to see a new specialist.[137]

VI.C. Developing Appropriate Financial Benchmarks and Risk Adjustment Methodologies

APMs often base payment on provider performance, which can be assessed by comparing a provider's (or group of providers') performance to benchmarks for specific quality and/or cost outcomes. Financial benchmarks in APMs that include patients with complex chronic conditions or serious illnesses should adequately reflect the high cost of care needed for these patients. If benchmarks are set too low and do not reflect the higher cost of care needed for more complex patients, providers may be incentivized to

provide fewer services to not lose out on potential shared savings. Effective risk adjustment approaches are needed so that providers are not penalized for providing care to sicker or higher acuity populations, as patients with complex chronic conditions or serious illnesses tend to have multifaceted risk.[138] If benchmarks are not appropriately risk adjusted, providers may be accountable for lower acuity patients and avoiding high acuity patients. Safeguards and other strategies can be used to address issues caused by "cherry-picking" patients.

Some CMMI APMs modify benchmarks and risk adjustment models to better account for patients with complex chronic conditions or serious illnesses. For example, in the Primary Care First (PCF) model, practices are stratified into four risk groups using CMS-HCC risk scores for attributed patients, with practices that serve patients with higher risk scores receiving larger population-based payments.[139] In the GUIDE model, which aims to support care for patients with dementia, patients are assigned to complexity tiers which determine per beneficiary per month (PBPM) payments, with higher PBPM payments for more complex patients.[140] In CMMI ACO models, benchmarks are calculated separately for beneficiaries with ESRD, reflecting the higher acuity and projected costs for those beneficiaries.[141,142,143]

Additionally, CMS developed a new CMMI-HCC concurrent risk score for use in the ACO REACH model's High Needs track. [144] The CMMI-HCC risk score is based on the CMS-HCC prospective risk score, which uses a beneficiary's demographics and chronic conditions in the prior year to predict Medicare spending in the following year.[145] By using a concurrent methodology (i.e., estimating a risk score for a year based on care received within the year), the CMMI-HCC risk score can capture rapid health deteriorations within a performance year that would not be captured prospectively, such as unexpected acute health events or exacerbations that are difficult to prevent or predict. High Needs ACOs serve beneficiaries with complex chronic conditions or serious illnesses and "highly variable, high-expenditure needs," and the concurrent CMMI-HCC risk score aims to establish a less risky financial position for these ACOs, as reliable and accurate estimates of these beneficiaries' spending are difficult to generate prospectively.[146]

VI.D. Measuring Performance

Measuring care outcomes for patients with complex chronic conditions or serious illnesses is especially important given the likelihood that this patient population results in more negative outcomes compared to the general population. The National Quality Forum (NQF)'s Multiple Chronic Conditions Measurement Framework, launched in 2012, provides a broad structure for ensuring that needs of patients with complex chronic conditions are being reflected accurately in performance measurement strategies.[147] The NQF Framework establishes a standardized definition of multiple chronic conditions as "two or more concurrent chronic conditions that collectively have an adverse effect on health status, function, or quality of life and that require complex healthcare management, decision-making, or coordination." It also emphasizes the importance of measuring care transitions, inappropriate care, patient-centered outcomes, patient engagement, and patient experience.

The NQF Framework identifies six priority measurement domains for patients with multiple chronic conditions: 1) affordable care; 2) patient safety; 3) person- and family-centered care; 4) health and well-being; 5) effective prevention and treatment; and 6) effective communication and care coordination.[148] Because patients with multiple chronic conditions or serious illnesses in PB-TCOC models likely have

multiple providers and are receiving coordinated care from multidisciplinary teams, outcomes may best be measured at the organization level to reflect the combined efforts of the organizational care team.[149]

To successfully employ these priority measurement domains, value-based care programs and APMs first need to prioritize bringing the experience of patients with complex chronic conditions or serious illnesses into the design phase of the model.[150] If these patients are not considered in the APM design, the measures selected may not be relevant for these patients, and interpretation of these performance measures may be complex. For instance, if the number of patients with complex chronic conditions or serious illnesses enrolled in a model is too small to reliably evaluate, measuring performance using the approach applied to the population at large may not be feasible.

APMs that measure performance based on total cost of care come with the risk of stinting where patients to do not get necessary care based on accountable entities' incentive to manage costs. This can be a particularly problematic issue for patients with complex chronic conditions or serious illnesses who often have a high level of need and require costly care.[151] Organizations in PB-TCOC models may be disincentivized to provide a higher level of costly care for these patients so that they perform better against financial benchmarks.[152,153] APMs use a number of strategies to ensure that care stinting is not occurring, including simultaneous monitoring of spending and quality measures, using risk stratification or risk adjustment when developing benchmarks to ensure that cost benchmarks reflect the acuity of a specific population, and assessing performance by comparing care delivery patterns to a reference population.[154,155,156,157]

Three CMMI APMs (ACO REACH, the Medicare Shared Savings Program [MSSP], and Merit-Based Incentive Payment System [MIPS]) use a quality measure which aligns with the NQF Framework definition of multiple chronic conditions: Risk-Standardized, All-Cause Unplanned Admissions for Multiple Chronic Conditions.[158] For all three of these APMs, their performance on this measure is tied to financial incentives through pay-for-reporting, pay-for-performance, and/or performance adjustments.[159,160,161]

Use of patient-reported outcome measures (PROMs), a key concept in the NQF Framework, is also common in CMMI programs; there are 57 PROMs integrated into 21 CMS programs, five of which are APMs (ACO REACH, the Comprehensive Joint Replacement [CJR] model, the Maryland Total Cost of Care [MD-TCOC] model, MIPS, and PCF).[162] ACO REACH, CJR, MD-TCOC, and PCF all use a form of the Consumer Assessment of Healthcare Providers and Systems (CAHPS) survey to measure patient experience. Two APMs integrate non-CAHPS measures of patient experience: the Kidney Care Choices (KCC) model includes a measure of depression response and PAM score, and MIPS includes one person-centered primary care measure and 17 functional status scores. As part of its 2021 Strategy Refresh, CMMI has also reaffirmed its commitment to person-centered care, a key component of the NQF Frameworks, by incorporating patient and caregiver perspectives and "measuring what matters" by including at least two PROMs in new APMs, supporting PROM development, using PROMs as pay-for-performance quality measures, and aligning PROMs across CMMI models and programs.[163,164]

VI.E. Payment Methodology

Experts note that many existing provider payment methods, including FFS, capitation, and some pay-for-performance programs, are not well aligned with the coordinated, team-based approach to care

commonly needed by patients with complex chronic conditions or serious illnesses.[165] In particular, FFS payment approaches may incent providers to deliver a greater quantity of clinical services.

APMs move away from traditional FFS payments and aim to create incentives for delivery of high-quality, coordinated care via financial incentives. Broadly, payment models used for populations of patients with complex chronic conditions or serious illnesses are the same as used for less acute patients, which include shared savings and losses, performance-based adjustments, flat payments for infrastructure and services, PBPM payments, global budgets, capitated payments, and coverage expansion to additional services.[166]

However, experts identify many barriers to effective payment reform and APM participation for providers responsible for caring for patients with complex chronic conditions or serious illnesses. First, health care delivery is fragmented for patients with complex health care needs, especially when care is delivered across multiple physicians and settings.[167] Additionally, there is a lack of payment for non-physician providers (e.g., nurses, peer educators) and services needed to support care coordination, follow-up, e-consults, and education for patients with complex health care needs.[168] For patients who require palliative care, there is generally a lack of payment to support community-based palliative care services in combination with treatment.[169] And as many providers are still operating within a FFS environment, high-quality, efficient care could result in potential revenue reductions for some providers (e.g., decreasing hospitalizations and ED visits among patients with chronic health conditions could lead to reduced revenues for hospitals), which may disincentivize the shift to APMs or value-based care more broadly.[170]

Some challenges related to financial incentives can differ by provider characteristics, including provider type. For example, a specialist may help an ACO receive a shared savings bonus, but there is typically not a mechanism in place to ensure that the specialist receives a portion of the bonus.[171] Under the capitation payment method, providers may choose to withhold services and avoid delivering care to patients when the patients' actual cost of services would exceed the provider's monthly payment.[172] These unintended consequences can lead provider groups to encourage patients with complex health care needs to de-select their providers.[173] Additional work is needed to understand how different value-based payment models impact equity among different subgroups of clinically high-risk patients.

VII. Relevant Features in Previously Submitted PTAC Proposals

This section summarizes findings from an analysis of components and themes related to patients with complex chronic conditions and serious illnesses in previously submitted PTAC proposals. Among the 35 proposals that were submitted to PTAC between 2016 and 2020, thirteen proposals included components related to addressing the needs of patients with complex chronic conditions and/or serious illnesses. The Committee found that seven of these proposals met Criterion 7 (Integration and Care Coordination), which is one of the 10 criteria that the Secretary of Health and Human Services (HHS) has established for proposed PFPMs.

Exhibit 3 includes the results of an analysis of the model features and characteristics of the following five selected proposals that focus on patients with complex chronic conditions or serious illnesses:

- American Academy of Hospice and Palliative Medicine (AAHPM)
- Coalition to Transform Advanced Care (C-TAC)

- Hackensack Meridian Health and Cota (HMH/Cota)
- New York City Department of Health and Mental Hygiene (NYC DOHMH)
- Renal Physicians Association (RPA)

Two of these proposals focused on increasing access to palliative care, and the other three proposals focused on condition-specific approaches for improving care delivery.

Exhibit 3. Components of Selected PTAC Proposals that are Relevant to Patients with Complex Chronic Conditions or Serious Illnesses

Proposal	Clinical Focus	Components and Financial Incentives Relevant to Patients with Complex Chronic Conditions or Serious Illnesses
American Academy of Hospice and Palliative Medicine	Serious illness and palliative care	**Overall Model Design Features:** PACSSI proposes palliative care medical home services for high-need patients not yet eligible or not wanting hospice care. **Care Coordination and/or Care Transition Approaches:** Use of interdisciplinary care teams; availability of multiple specialists; development of coordinated care plan; use of health information technology (HIT) **Financial Incentives to Enhance Participation by Providers**: Tiered monthly payments to replace E/M payments.
Coalition to Transform Advanced Care (C-TAC)	Advanced illness	**Overall Model Design Features:** ACM proposes advance care planning services through an interdisciplinary team and coordination of care with patients' regular providers. **Care Coordination and/or Care Transition Approaches:** Interdisciplinary teams and comprehensive care management **Financial Incentives to Enhance Participation by Providers**: PBPM payments with potential for quality-based bonus payment. Further, a partial advanced APM incentive where providers with a 75% enrollment of patients with advanced illness will receive a 5% bonus payment for professional fees.
Hackensack Meridian Health and Cota (HMH/Cota)	Cancer care	**Overall Model Design Features:** Oncology Bundled Payment Program proposes to use Cota Nodal Address (CNA)-Guided Care to diagnose patients and assess treatment needed. **Care Coordination and/or Care Transition Approaches:** Use of the EHR system (Epic) by all participating providers; team of care coordinators within PCP practices; care management module (Healthy Planet) for all patient care plans **Financial Incentives to Enhance Participation by Providers:** Bundled payment to cover all aspects of patients' oncology care

Proposal	Clinical Focus	Components and Financial Incentives Relevant to Patients with Complex Chronic Conditions or Serious Illnesses
New York City Department of Health and Mental Hygiene (NYC DOHMH)	Hepatitis C virus (HCV)	**Overall Model Design Features:** The Project INSPIRE Model proposes integrated medical, behavioral, and social services for patients with HCV. **Care Coordination and/or Care Transition Approaches:** This model utilizes care coordinators who document HCV treatment, including initiating care coordination, developing a care coordination plan, and attaining sustained virologic response (SVR). **Financial Incentives to Enhance Participation by Providers**: Bundled payment and potential shared savings
Renal Physicians Association (RPA)	End-stage renal disease (ESRD)	**Overall Model Design Features:** The Incident ESRD Clinical Episode Payment Model proposes care coordination and renal transplantation, if applicable, for dialysis patients transitioning from chronic kidney disease (CKD) to ESRD (6 month episodes of care). **Care Coordination and/or Care Transition Approaches:** Care coordination between PCP and specialists, including vascular surgeons; coordinating dialysis care in outpatient settings **Financial Incentives to Enhance Participation by Providers:** Shared savings for the 6-month episode of care; bonus payment for patients receiving a kidney transplant

Appendix D includes additional information about the model features and characteristics of the five selected proposals that focus on patients with complex chronic conditions or serious illnesses:

The other eight PTAC PFPM proposals that included components related to addressing the needs of patients with complex chronic conditions and/or serious illnesses are:

- American Society of Clinical Oncology (ASCO)
- Innovative Oncology Business Solutions, Inc. (IOBS)
- American College of Allergy, Asthma, & Immunology (ACAAI)
- Community Oncology Alliance (COA)
- Digestive Health Network, Inc. (DHN)
- Dialyze Direct
- Illinois Gastroenterology Group (IGG)/SonarMD, LLC.
- Large Urology Group Practice Association (LUGPA)

VIII. Areas Where Additional Information is Needed

This section includes a summary of some areas for consideration to guide future research on addressing the needs of patients with complex chronic conditions or serious illnesses in PB-TCOC models. **Appendix F** further describes areas for future exploration and research.

Definitions of Complex Chronic Conditions and Serious Illnesses

While many agencies and organizations have adopted the definition of serious illness by Kelley et al.,[174] there is not currently a standardized definition in place for complex chronic conditions. Many agencies (e.g., CMS, CDC, Veterans Affairs [VA], Agency for Healthcare Research and Quality [AHRQ]) use their own definitions, and definitions may vary broadly. For example, organizations differ on the duration of chronic conditions (e.g., three months, six months, one year) and number of chronic conditions (e.g., two or more, multiple, or not specified).

How to Identify these Patients Prospectively

Additional work is needed about the development and evaluation of innovative identification methods of patients with complex chronic conditions or serious illnesses, particularly related to identifying patients at risk of rising cost. For example, methods using artificial intelligence could improve the identification of higher-risk patients.

Appendix A. Research Questions by Environmental Scan Section

Section	Research Questions
Section IV. Overview of High-Cost Patients	- How are/should patients with complex chronic conditions and/or serious illnesses be defined? - How do patients with complex chronic conditions differ from patients with serious illnesses, and how much overlap exists between these patients? - How are conditions and associated symptoms identified in data, including claims (e.g., claim type, diagnosis code), clinical registries, assessments (e.g., the Minimum Data Set [MDS] 3.0), medical record abstraction, and EHRs? - In what settings are these different data sources used? Are standardized patient data needed for multiple providers caring for patients with complex chronic conditions and/or serious illnesses in PB-TCOC models? If so, how? Are there current examples of the collection and use of standardized patient assessment data and performance measures (e.g., post-acute care settings, other)? - What are the characteristics of the patients who account for the top five percent of Medicare spending? - How does spending (Medicare Parts A and B, out-of-pocket spending) vary in this population? How does spending vary by condition or subspecialty? - What are the primary drivers of spending and utilization for patients with complex chronic conditions and/or serious illnesses? - How are patients with complex chronic conditions and/or serious illnesses prospectively identified by payers, ACOs, and providers? - What are some factors that may predict the likelihood of disease progression/level of care required for patients with complex chronic conditions and/or serious illnesses? - What are common risk stratification approaches (e.g., traditional approaches versus machine learning risk stratification approaches)? - What are challenges associated with identifying and caring for patients with complex chronic conditions and/or serious illnesses? - Challenges with patient identification (e.g., data sources, risk stratification) - Challenges with clinical care (e.g., multiple specialties, care coordination and transitions) - Challenges with certain populations (e.g., disadvantaged populations, health-related social needs)

Section	Research Questions

Section V. Care Delivery Challenges and Approaches	• What are the major challenges that affect patients with complex chronic conditions and/or serious illnesses?
	    ○ What is the desired relationship between management of complex chronic conditions and primary care? What is the current state of this relationship, and what steps are needed to get to the desired state?
	    ○ What is the desired relationship between management of serious illnesses and primary care? What is the current state of this relationship, and what steps are needed to get to the desired state?
	    ○ What is the patient and caregiver burden associated with avoidable exacerbations of complex chronic conditions and/or serious illnesses?
	    ○ How do social determinants of health exacerbate challenges related to delivering care to patients with complex chronic conditions and/or serious illnesses?
	• Are there major barriers associated with patients with complex chronic conditions and/or serious illnesses participating in APMs? If so, what are these barriers?
	    ○ Does integrated care work for this population? What are current examples of integrated care models for this population?
	    ○ When is it appropriate for these patients to be part of a larger model, and when is it appropriate for these patients to be in a model only for the given patient population (e.g., seriously ill, specific chronic conditions)? Are there instances where both are appropriate?
	• Are there major barriers associated with participation and engagement in APMs from providers serving patients with complex chronic conditions and/or serious illnesses? If so, what are they?
	    ○ How do providers engage with specialists to facilitate a team-based care approach?
	• What are current care delivery approaches for patients with complex chronic conditions and/or serious illnesses?
	    ○ Care delivery approaches across the patient's care journey
	    ○ Current approaches used in APMs
	• Are additional or innovative efforts to improve care coordination needed for patients with complex chronic conditions and/or serious illnesses, compared to a more general patient population? If so, what efforts may be most effective at improving care coordination for patients with complex chronic conditions and/or serious illnesses?

Section VI. Payment Model Participation Challenges and Lessons Learned	• What types of performance measures should be used for providers treating patients with complex chronic conditions and/or serious illnesses in TCOC models?
	    ○ Frameworks, measure characteristics
	    ○ Quality measures, outcome measures, patient experience measures
	• What challenges exist related to developing effective payment models for addressing patients with complex chronic conditions and/or serious illnesses?
	    ○ Attribution, benchmarking, risk-adjustment
	    ○ Incentives for improving patient outcomes
	• What are examples of APMs, including CMMI models (e.g., MCCM, MA VBID Model), that include or focus on patients with complex chronic conditions and/or serious illnesses?

Section	Research Questions
	• What are examples of other CMS programs that include or focus on patients with complex chronic conditions and/or serious illnesses (e.g., Chronic Condition Special Needs Plans)? • What are examples of previously submitted PTAC proposals that include or focus on patients with complex chronic conditions and/or serious illnesses? • What are examples of Medicaid programs that have been effective in improving care delivery and performance outcomes for patients with complex chronic conditions and/or serious illnesses? • What are examples of commercial plans that have been effective in improving care delivery and performance outcomes for patients with complex chronic conditions and/or serious illnesses?

Appendix B. Examples of Definitions of Complex Chronic Conditions and Serious Illnesses

There is no consensus on the definitions that may be used for identifying patients with complex chronic conditions or serious illnesses. Definitions vary regarding the number and types of conditions, severity, and duration of illness. The following are examples of some of the definitions that are used for complex chronic conditions and serious illnesses.

B.I. Complex Chronic Conditions

Centers for Disease Control and Prevention (CDC). "Chronic diseases are defined broadly as conditions that last 1 year or more and require ongoing medical attention or limit activities of daily living or both."[175]

U.S. National Center for Health Statistics (NCHS), CDC. "A chronic disease […] is a disease lasting three months or longer. About 40 million Americans are limited in their usual activities due to one or more chronic health conditions."[176]

Agency for Healthcare Research and Quality (AHRQ). "A chronic condition is defined as a condition that lasts 12 months or longer and meets one or both of the following tests: (a) it places limitations on self-care, independent living, and social interactions; (b) it results in the need for ongoing intervention with medical products, services, and special equipment."[177]

Centers for Medicare & Medicaid Services (CMS). "The Multiple Chronic Conditions Measurement Framework defines multiple chronic conditions (MCC) as having two or more concurrent chronic conditions that collectively have an adverse effect on health status, function, or quality of life and that require complex healthcare management, decision-making, or coordination."[178]

National Quality Forum (NQF). "[Multiple Chronic Conditions are] persons having two or more concurrent chronic conditions that collectively have an adverse effect on health status, function, or quality of life and that require complex healthcare management, decision-making, or coordination."[179]

Department of Veterans Affairs (VA). "Chronic conditions are broadly defined to include physical illnesses or impairments and comorbid conditions with consequences such as increased risk of mortality."[180]

"A Complex Chronic Disease (CCD) is a condition involving multiple morbidities, that requires the attention of multiple health care providers or facilities and possibly community (home)-based care. A patient with CCD presents to the health care system with unique needs, disabilities, or functional limitations."[181]

The World Health Organization (WHO). "Noncommunicable diseases (NCDs), also known as chronic diseases, are not passed from person to person. They are of long duration and generally slow progression. The four main types – cardiovascular diseases, cancer, diabetes and chronic respiratory diseases – impose a major and growing burden on health and development."[182]

Robert Wood Johnson Foundation. "Health conditions that last a year or more and require ongoing medical attention and/or limit activities of daily living. This definition includes people with chronic illnesses or disabilities, or both."[183]

J. Flowers Health Institute. "A complex medical condition often refers to the following:

1. A health problem that affects multiple body systems.
2. A condition that has multiple symptoms."[184]

Multiple Chronic Conditions Resource Center. "Multiple Chronic Conditions (MCC) means that a person is living with two or more chronic conditions at the same time."[185]

Dr. Chris Feudtner. "Any medical condition that can be reasonably expected to last at least 12 months (unless death intervenes) and to involve either several different organ systems or 1 organ system severely enough to require specialty pediatric care and probably some period of hospitalization in a tertiary care center."[186]

Sevick et al. (2007). "A Complex Chronic Disease (CCD) is a condition involving multiple morbidities, that requires the attention of multiple health care providers or facilities and possibly community (home)-based care. A patient with CCD presents to the health care system with unique needs, disabilities, or functional limitations."[187]

National Cancer Institute (NCI), National Institutes of Health (NIH). "A disease or condition that usually lasts for 3 months or longer and may get worse over time. Chronic diseases tend to occur in older adults and can usually be controlled but not cured. The most common types of chronic disease are cancer, heart disease, stroke, diabetes, and arthritis."[188]

American Medical Association (AMA). "Chronic diseases are long-term health conditions that can have a significant impact on a person's quality of life. Some of the most common chronic diseases include diabetes, heart disease and cancer. Chronic pain is also a prevalent issue, a common chronic disease affecting millions of people worldwide, and can be caused by a variety of factors, including injury, illness or an underlying medical condition."[189]

Australian Institute of Health and Welfare. "An illness that is prolonged in duration, lasts longer than 6 months, is often not spontaneous to resolve, and is rarely completely cured. Chronic diseases are complex and varied in terms of their nature, how they are caused and their impact on the community. While some chronic diseases make large contributions to premature death, others contribute more to disability. Features common to most chronic diseases include:

- complex causality, with multiple factors leading to their onset
- a long development period, for which may there may be no symptoms
- a prolonged course of illness, perhaps leading to other health complications
- associated with functional impairment or disability."[190]

B.II. Serious Illnesses

Dr. Amy Kelley et al. "Serious illness is a condition that carries a high risk of mortality, negatively impacts quality of life and daily function, and/or is burdensome in symptoms, treatments or caregiver stress."

- "Condition and/or Functional Limitation (most broad): one or more severe medical conditions (Condition) and/or receiving assistance with any of the six basic activities of daily living (ADL), that is, eating, bathing, dressing, toileting, transferring, and walking (Functional Limitations) (i.e.,

serious illness is a severe diagnosis and/or functional impairment). Drawing upon existing literature and input from several clinical experts in geriatrics and palliative care, whose patient population spans the full range of seriously ill older adults, severe medical conditions included the following: cancer (metastatic or hematologic), renal failure, dementia, advanced liver disease or cirrhosis, diabetes with severe complications (ischemic heart disease, peripheral vascular disease, renal disease), amyotrophic lateral sclerosis (ALS), acquired immune deficiency syndrome, hip fracture, chronic obstructive pulmonary disease or interstitial lung disease only if using home oxygen or hospitalized for the condition, and congestive heart failure only if hospitalized for the condition. These medical conditions "carry a high risk of mortality" as described in the conceptual definition and are identifiable within claims data with the markers of disease severity specified above."

- "Condition and/or Functional Limitation and Utilization: one or more severe medical conditions and/or receiving assistance with any ADL and one or more hospital admission in the last 12 months and/or residing in a nursing home (Utilization) (i.e., serious illness is functional impairment and/or severe medical condition, along with significant health care utilization)."
- "Condition and Functional Limitation and Utilization (most restricted): one or more severe medical conditions and receiving assistance with any ADL and one or more hospital admission in the last 12 months and/or residing in a nursing home (i.e., serious illness is severe medical condition and functional impairment with significant health care utilization).[191]

Centers for Medicare & Medicaid Services (CMS). "An individual is considered to be terminally ill if the medical prognosis is that the individual's life expectancy is 6 months or less if the illness runs its normal course."[192]

"Serious illness defined as at least one of the following characteristics:

- Medical complexity
- High hospital utilization
- Signs of frailty."[193]

The Commonwealth Fund. "We considered someone to have serious illness if, within the past three years, they had two or more hospital stays and visits with three or more doctors."[194]

International Association for Hospice and Palliative Care (IAHPC). "Terminal condition [...] defined as a progressive condition that has no cure and that can be reasonably expected to cause the death of a person within a foreseeable future."[195]

Sincera. "Serious illness is often defined as illness that could result in death in one to two years, but where a cure may still be possible."[196]

Office of Human Resources Management. "Serious health condition means an illness, injury, impairment, or physical or mental condition which requires:

- Overnight hospitalization (including prenatal care), including the period of incapacity or subsequent treatment in connection with the overnight care
- Continuing treatment (for a chronic or long-term condition) under the care or supervision of a health care provider. Included under this heading are chronic conditions (e.g., asthma, epilepsy, etc.) that continue over an extended period of time and may cause episodic rather than a

continuing period of incapacity and conditions that are not usually incapacitating but would result in a period of incapacity of more than 3 consecutive calendar days if medical treatment were omitted (e.g., chemotherapy, kidney dialysis, pregnancy, etc.). Note that incapacity means the inability to work, attend school, or perform regular daily activities (eating, washing, walking, shopping, etc.,) because of a serious health condition or treatment for or recovery from a serious health condition."[197]

Law Insider. "Serious illness means an accident, injury, illness, disease, or physical or mental condition that: poses imminent danger of death; requires inpatient care in a hospital, hospice, or residential medical facility; or requires continuing in-home care under the direction of a physician or health care provider."[198]

Appendix C. Summary of Model Features and Characteristics of Selected CMMI Models that Focus on Patients with Complex Chronic Conditions or Serious Illnesses

Overview of Methodology Used to Review the Selected CMMI Models

An initial list of 15 CMMI models were identified that address chronic conditions or serious illnesses. Findings from an analysis of four selected CMMI models are summarized in the following table.

The available information on each of the four selected CMMI models' summary pages on the CMMI website was reviewed. This included model overviews, informational webinars, evaluation reports and findings (as applicable), summaries, fact sheets, and press releases. Information found in these materials was used to summarize the models' main design features, including benefit components, flexibilities, care coordination approaches, financial incentives, performance measures, and modifications to risk adjustment or benchmarking for patients with complex chronic conditions or serious illnesses.

Exhibit C1.   Characteristics of CMMI Models that Focus on Patients with Complex Chronic Conditions or Serious Illnesses

Model Name	Clinical Focus, Providers, Setting, Patient Population	Components and Financial Incentives Relevant to Patients with Complex Chronic Conditions or Serious Illnesses	Performance Measurement Features for Patients with Complex Chronic Conditions or Serious Illnesses	Lessons Learned Related to Patients with Complex Chronic Conditions or Serious Illnesses
Guiding an Improved Dementia Experience (GUIDE) Model **(GUIDE)** *Announced – Applications under review*	**Clinical Focus:** Dementia **Providers:** Medicare Part B-enrolled provider or supplier **Setting:** At home **Patient Population:** Medicare beneficiaries with dementia	**Overall Model Design Features:** The GUIDE Model is focused on improving dementia care quality through defining a standardized approach to dementia care delivery, providing an alternative payment methodology, addressing unpaid caregiver needs, providing respite services, and screening for HRSNs. **Eligibility Criteria:** Medicare Part B-enrolled providers and suppliers (excluding durable medical equipment [DME] and laboratory suppliers) are eligible to participate in the GUIDE Model. Beneficiaries must have dementia, be enrolled in Medicare Part B, and have not elected the Medicare hospice benefit. **Benefit Components for Patients with Complex Chronic Conditions or Serious Illnesses:** CMS will provide a PBPM payment to support a team-based collaborative care approach, which includes services for chronic care management. **Flexibilities for Patients with Complex Chronic Conditions or Serious Illnesses:** Participants will assign patients with dementia as well as their caregivers to a care navigator for both clinical and non-clinical services (e.g., meals via community-based organizations). **Care Coordination and/or Care Transition Approaches for Patients with Complex Chronic Conditions or Serious Illnesses:** Robust, person-centered assessments and 24/7 access to a support line and care navigators to help access services and supports. Also provides enhanced access to resources for caregivers, such as training programs. **Financial Incentives to Enhance Participation by Providers Caring for Patients with Complex Chronic Conditions or Serious**	**Measures Specific to Patients with Complex Chronic Conditions or Serious Illnesses:** Quality of life outcome (survey); use of high-risk medications; total per capita cost; long-term nursing home rate; caregiver burden **Modifications to Risk Tracks or Risk Adjustment to Address This Population:** PBPM rates will be adjusted based on geographic location, health equity adjustment (HEA), and a performance-based adjustment (PBA). **Modifications to Performance-Based Payment to Address This Population:** The PBA will increase or decrease participants' PBPM payment, depending on how they performed on the model's performance metrics during the previous performance year. **Modifications to Benchmarking to Address This Population:** N/A	*This model is not yet active.*

Model Name	Clinical Focus, Providers, Setting, Patient Population	Components and Financial Incentives Relevant to Patients with Complex Chronic Conditions or Serious Illnesses	Performance Measurement Features for Patients with Complex Chronic Conditions or Serious Illnesses	Lessons Learned Related to Patients with Complex Chronic Conditions or Serious Illnesses
		Illnesses: CMS will provide three types of payment: 1) infrastructure payment (safety net providers can receive a one-time infrastructure payment for program development activities); 2) PBPM payment (to provide care management, coordination, caregiver training, and other support services); and 3) respite care payment (providers can bill for respite services).		

Model Name	Clinical Focus, Providers, Setting, Patient Population	Components and Financial Incentives Relevant to Patients with Complex Chronic Conditions or Serious Illnesses	Performance Measurement Features for Patients with Complex Chronic Conditions or Serious Illnesses	Lessons Learned Related to Patients with Complex Chronic Conditions or Serious Illnesses
Medicare Advantage (MA) Value-Based Insurance Design (VBID) (**MA VBID**) *Ongoing* Years active: 2017-present	**Clinical Focus:** Chronic conditions **Providers:** Medicare Advantage Organizations (MAOs) **Setting:** Broad **Patient Population:** Medicare Advantage beneficiaries with low socioeconomic status and chronic health condition(s)	**Overall Model Design Features:** The MA VBID Model allows MAOs to design benefits based on chronic condition, socioeconomic characteristics, or ADI. It also incentivizes the use of Part D prescription drug benefits through rewards and incentives (RI). There is also an optional Medicare hospice benefit. **Eligibility Criteria:** Coordinated Care Plans and Special Needs Plans (SNPs) are eligible to participate in the MA VBID Model. Further, the MAO's contract offering the plan benefit package (PBP) has not been under sanction by CMS and has a minimum three-star overall quality Star Rating for the most recent year. **Benefit Components for Patients with Complex Chronic Conditions or Serious Illnesses:** Supplemental benefits offered must address HRSNs, such as food, transportation, and housing. The hospice benefit helps patients who need end-of-life care transition to hospice care. **Flexibilities for Patients with Complex Chronic Conditions or Serious Illnesses:** Flexibilities include health- and non-health-related supplemental services and items; care management or disease management programs; reduced cost sharing for Part C services and Part D drugs. **Care Coordination and/or Care Transition Approaches for Patients with Complex Chronic Conditions or Serious Illnesses:** Care management programs **Financial Incentives to Enhance Participation by Providers Caring for Patients with Complex Chronic Conditions or Serious Illnesses:** MAOs may provide reduced cost sharing to beneficiaries based on chronic condition or socioeconomic status. MAOs may also offer rewards and incentives specific to participation in a transition of care program.	**Measures Specific to Patients with Complex Chronic Conditions or Serious Illnesses:** Advance Care Plans (ACPs); number of beneficiaries who participated in a wellness and health care planning (WHP) discussion; experience of care; beneficiary cost-sharing amounts for palliative care; election rate of hospice care; proportion of beneficiaries admitted to hospice for less than seven days; days spent at home in last six months of life; proportion admitted to intensive care in last 30 days of life; pre-hospice consultation process; access to hospice providers; proportion of lengths of stay beyond 180 days; transitions from hospice care, followed by death or acute care; visits in the last days of life; hospice supplemental benefits; Part D duplicative drug utilization; utilization of unrelated care; hospice utilization; beneficiary and provider complaints; transitional concurrent care services **Modifications to Risk Tracks or Risk Adjustment to Address This Population:** N/A **Modifications to Performance-Based Payment to Address This Population:** N/A **Modifications to Benchmarking to Address This Population:** N/A	In 2020, MAOs participating in the MA VBID Model showed increased beneficiary drug adherence; in 2021, MAO participants had increased Star Ratings. However, there was also an increase in risk scores and inpatient stays in 2020. Data on model effectiveness are limited. The biggest implementation challenges included meeting model-specific reporting requirements and working with vendors.[iv]

Model Name	Clinical Focus, Providers, Setting, Patient Population	Components and Financial Incentives Relevant to Patients with Complex Chronic Conditions or Serious Illnesses	Performance Measurement Features for Patients with Complex Chronic Conditions or Serious Illnesses	Lessons Learned Related to Patients with Complex Chronic Conditions or Serious Illnesses
Medicare Care Choices Model ([MCCM](#)) *No longer active* Years active: 2016-2021	**Clinical Focus:** Palliative care for beneficiaries with advanced illnesses **Providers:** PCPs **Setting:** Hospice care facilities **Patient Population:** Medicare and dually eligible beneficiaries with terminal illnesses	**Overall Model Design Features:** MCCM allowed Medicare beneficiaries to obtain palliative care from hospice providers (e.g., pain and symptom management, spiritual services, counseling) while still receiving care for their condition or illness from other Medicare providers (which beneficiaries usually cannot receive once they elect to receive hospice services). **Eligibility Criteria:** Eligible hospices were required to be Medicare certified and had at least one interdisciplinary provider team. Beneficiaries must have had a diagnosis of one of the following terminal illnesses: advanced cancer, chronic obstructive pulmonary disease, congestive heart failure, or human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS); must not have enrolled in hospice within 30 days of enrolling in MCCM; and must live at home (e.g., not receive assistive services). **Benefit Components for Patients with Complex Chronic Conditions or Serious Illnesses:** Hospices had some flexibility in designing their care choices programs but had to provide care coordination and case management, 24/7 access to hospice team, shared decision-making, person- and family-centered care planning, counseling, and symptom management. **Flexibilities for Patients with Complex Chronic Conditions or Serious Illnesses:** Beneficiaries can access palliative care services while still receiving care for their terminal condition from other Medicare providers.	**Measures Specific to Patients with Complex Chronic Conditions or Serious Illnesses:** Quality measures: pain screening and management encounters; shortness of breath screening and management encounters; psychological/emotional well-being screening and management encounters; bowel regimen for opioid use encounters; spiritual or religious discussions; advance care planning discussions; hospice-registered nurse provided encounters; number of MCCM encounters delivered in-person; number of MCCM encounters delivered in the home **Modifications to Risk Tracks or Risk Adjustment to Address This Population:** N/A **Modifications to Performance-Based Payment to Address This Population:** N/A **Modifications to Benchmarking to Address This Population:** N/A	Evaluation results estimate reduced Medicare expenditures by $7,604 per beneficiary, or 13% in total. Two-thirds (64%) of eligible beneficiaries chose MCCM over other options. However, participating hospices noted that the PBPM payments of $400 were not high enough to cover all costs. The model enabled earlier receipt of hospice services, which possibly increased hospice utilization and resulted in savings. This suggests that offering options for palliative care may improve Medicare beneficiaries' quality of life and reduce costs.[v]

[iv] Centers for Medicare & Medicaid Services. The Innovation Center. Evaluation of Phase II of the Medicare Advantage Value-Based Insurance Design Model Test: First Two Years of Implementation (2020–2021). October 2022. https://www.cms.gov/priorities/innovation/data-and-reports/2022/vbid-1st-report-2022
[v] Centers for Medicare & Medicaid Services. The Innovation Center. Evaluation of the Medicare Care Choices Model; Fifth and Final Annual Evaluation Report. November 2023. https://www.cms.gov/priorities/innovation/data-and-reports/2023/mccm-fifth-annrpt

Model Name	Clinical Focus, Providers, Setting, Patient Population	Components and Financial Incentives Relevant to Patients with Complex Chronic Conditions or Serious Illnesses	Performance Measurement Features for Patients with Complex Chronic Conditions or Serious Illnesses	Lessons Learned Related to Patients with Complex Chronic Conditions or Serious Illnesses
		Care Coordination and/or Care Transition Approaches for Patients with Complex Chronic Conditions or Serious Illnesses: Information is shared among the participating hospice's interdisciplinary team to ensure the delivery of coordinated care. **Financial Incentives to Enhance Participation by Providers Caring for Patients with Complex Chronic Conditions or Serious Illnesses:** PBPM payments to participating hospices		
Medicare Diabetes Prevention Program (MDPP) Expanded Model *Ongoing* Years active: 2018-present	**Clinical Focus:** Diabetes (Type 2) **Providers:** MDPP supplier organizations (e.g., health organizations, hospitals, community organizations) **Setting:** Broad **Patient Population:** Pre-diabetic patients at risk of type 2 diabetes	**Overall Model Design Features:** MDPP provides interventions to try to prevent type 2 diabetes in patients with signs of pre-diabetes. Patients receive 16 "core" sessions over six months focused on dietary changes, physical activity, and healthy lifestyle habits. Core sessions are followed by six follow-up sessions over six months. **Eligibility Criteria:** MDPP supplier organizations must be enrolled in Medicare and receive Diabetes Prevention Recognition Program (DPRD) certification from the CDC. Beneficiaries must meet a minimum body mass index and at least one blood test requirement. **Benefit Components for Patients with Complex Chronic Conditions or Serious Illnesses:** MDPP supplier organizations are required to provide core and ongoing maintenance sessions to beneficiaries. These sessions focus on good nutritional habits and physical activity. Patients also receive education on how to manage chronic conditions.	**Measures Specific to Patients with Complex Chronic Conditions or Serious Illnesses:** Number of sessions attended; amount of weight loss **Modifications to Risk Tracks or Risk Adjustment to Address This Population:** N/A **Modifications to Performance-Based Payment to Address This Population:** Provider reimbursement is based on attendance and weight loss metrics. **Modifications to Benchmarking to Address This Population:** N/A	An evaluation reported that 57% of beneficiaries live > 25 miles from an MDPP supplier so improving access to MDPP suppliers is important. Further, while some MDPP suppliers have reported patient weight loss, patient participation rates are too low to extrapolate results.[vi]

[vi] Centers for Medicare & Medicaid Services. The Innovation Center. Evaluation of the Medicare Diabetes Prevention Program; Second Evaluation Report. November 2022. https://www.cms.gov/priorities/innovation/data-and-reports/2022/mdpp-2ndannevalrpt

Model Name	Clinical Focus, Providers, Setting, Patient Population	Components and Financial Incentives Relevant to Patients with Complex Chronic Conditions or Serious Illnesses	Performance Measurement Features for Patients with Complex Chronic Conditions or Serious Illnesses	Lessons Learned Related to Patients with Complex Chronic Conditions or Serious Illnesses
		Flexibilities for Patients with Complex Chronic Conditions or Serious Illnesses: Suppliers offer individual make-up sessions, as well as virtual platforms for beneficiaries as needed. **Care Coordination and/or Care Transition Approaches for Patients with Complex Chronic Conditions or Serious Illnesses:** Suppliers do not implement care coordination approaches. Communication with primary care providers is limited. **Financial Incentives to Enhance Participation by Providers Caring for Patients with Complex Chronic Conditions or Serious Illnesses:** To incentivize participation, reimbursement rates for core and maintenance sessions were increased in 2022 compared to 2021. Further, providers are incentivized to help patients reach their weight loss goals (e.g., 9% weight loss results in higher reimbursement than a 5% weight loss).		

Appendix D. Summary of Model Features and Characteristics of Proposals Reviewed by PTAC as of September 2020 that Focus on Patients with Complex Chronic Conditions or Serious Illnesses

Overview of Methodology Used to Review the Proposals

The following information was reviewed for each submitter's proposal, where available: proposal and related documents, Preliminary Review Team (PRT) Report, and Report to the Secretary (RTS). Information found in these materials was used to summarize the proposals' main design features, including benefit components, flexibilities, care coordination approaches, financial incentives, performance measures, and modifications to risk adjustment or benchmarking for patients with complex chronic conditions or serious illnesses.

Seven previously submitted PTAC proposals were identified that include components related to chronic conditions or serious illnesses and meet Criterion 7 (Integration and Care Coordination). Findings from the review of five of these proposals is summarized in the following table.

Exhibit D1.   Characteristics of PTAC PFPM Proposals that Focus on Patients with Complex Chronic Conditions or Serious Illnesses

Submitter, Submitter Type, Proposal Name, and PTAC Recommendation and Date	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Patients with Complex Chronic Conditions or Serious Illnesses	Performance Measurement Features for Patients with Complex Chronic Conditions or Serious Illnesses
American Academy of Hospice and Palliative Medicine *(Provider association/specialty society)* **Patient and Caregiver Support for Serious Illness (PACSSI)** Recommended for limited-scale testing, 3/26/2018	**Clinical Focus:** Serious illness and palliative care **Providers:** Palliative care teams (PCT) **Setting:** Inpatient; outpatient; other palliative care settings **Patient Population:** Patients with serious illness	**Overall Model Design Features:** PACSSI proposes palliative care medical home services for high-need patients not yet eligible or not wanting hospice care. **Eligibility Criteria:** PCTs must follow National Consensus Project for Quality Palliative care guidelines and be able to respond 24/7 to patient needs. Beneficiaries must have a serious illness or multiple chronic conditions, functional limitations, and high utilization of health care services. **Benefit Components for Patients with Complex Chronic Conditions or Serious Illnesses:** PCTs will provide goals of care, develop a coordinated care plan, respond to the patient on a 24/7 basis, and coordinate services with other providers. **Flexibilities for Patients with Complex Chronic Conditions or Serious Illnesses:** N/A **Care Coordination and/or Care Transition Approaches for Patients with Complex Chronic Conditions or Serious Illnesses:** Use of interdisciplinary care teams; availability of multiple specialists; development of coordinated care plan; use of (HIT **Financial Incentives to Enhance Participation by Providers Caring for Patients with Complex Chronic Conditions or Serious Illnesses**: Tiered monthly payments to replace evaluation and management (E/M) payments.	**Measures Specific to Patients with Complex Chronic Conditions or Serious Illnesses:** Quality Measures: For years 1 and 2, completion of four applicable palliative care activities within 15 days of PACSSI enrollment: comprehensive assessment; screening for pain, dyspnea, nausea, and constipation; documentation of a discussion regarding emotional needs; and documentation of a discussion about advance care planning; Beginning year 3, completion of six applicable palliative care activities within 15 days of PACSSI enrollment: same four listed above, as well as documentation of a discussion of spiritual concerns and completion of a structured assessment of caregiver needs and distress. Patient Experience Measures: Measures from patient admission survey: Likelihood of patient recommendation; timeliness of response to urgent needs; adequacy of treatment for pain and symptoms; patient's perceptions regarding quality of communication; Post-death survey for PACSSI enrollees; Hospice CAHPS survey for PACSSI enrollees transferring to hospice and dying within seven days of disenrollment from PACSSI. Utilization Measures: Percentage of patients who died who received hospice care; percentage of patients who died and were enrolled in hospice more than seven days before death; percentage of patients who died and did not have any days in an intensive care unit (ICU) during the 30 days before death. **Modifications to Risk Tracks or Risk Adjustment to Address This Population:** Patients are assigned to one of two tiers (moderate- and high-complexity) based on diagnosis of serious illness; function; and health care utilization. PCTs receive higher payment amounts for serving tier 2 patients. Further, monthly payments are adjusted based on current Geographic Practice Cost Indices and patient's primary site of care (home versus facility).

Submitter, Submitter Type, Proposal Name, and PTAC Recommendation and Date	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Patients with Complex Chronic Conditions or Serious Illnesses	Performance Measurement Features for Patients with Complex Chronic Conditions or Serious Illnesses
			Modifications to Performance-Based Payment to Address This Population: Two tracks: Track 1- PCTs can receive positive or negative payment incentives up to 4% of care management fees based on performance. Track 2- PCTs are responsible for shared savings and shared risk adjusted based on performance. **Modifications to Benchmarking to Address This Population:** Benchmarks would be established based on data analysis of the performance measures during the first two years of the model.
Coalition to Transform Advanced Care (C-TAC) *(Coalition)* **Advanced Care Model (ACM) Service Delivery and Advanced Alternative Payment Model** Recommended for limited-scale testing, 3/26/2018	**Clinical Focus:** Advanced illness **Providers:** Palliative care providers (board-certified in palliative care and other specialties involved in advanced illness care) **Setting:** Inpatient; outpatient; home **Patient Population:** Patients with advanced illness, in their last 12 months of life	**Overall Model Design Features:** ACM proposes advance care planning services through an interdisciplinary team and coordination of care with patients' regular providers. **Eligibility Criteria:** Provider/entity must have a network of providers with experience in treating patients with advanced illness. Beneficiaries must meet criteria in two of the following categories: acute care utilization, functional decline, nutritional decline, and performance scale. Further, providers of the patient must answer "no" to the question, "would you be surprised if the patient died in the next 12 months?" **Benefit Components for Patients with Complex Chronic Conditions or Serious Illnesses:** Interdisciplinary teams, advance care planning, and 24/7 access to a provider **Flexibilities for Patients with Complex Chronic Conditions or Serious Illnesses:** N/A **Care Coordination and/or Care Transition Approaches for Patients with Complex Chronic Conditions or Serious Illnesses:** Interdisciplinary teams and comprehensive care management **Financial Incentives to Enhance Participation by Providers Caring for Patients with Complex Chronic**	**Measures Specific to Patients with Complex Chronic Conditions or Serious Illnesses:** Quality: ACM Team Visit within 48 hours of hospital discharge; timeliness of advance care planning; medication reconciliation post-discharge; proportion of patients who died and who were admitted to the ICU in the last 30 days of life; proportion of patients who died who were admitted to hospice for three days or more; ACM provider attestation that patient's care plan is consistent with preferences. Spending: total cost of care in the last 12 months of life; Patient Experience: Timeliness of care; getting help for symptoms (pain, anxiety and sadness, trouble breathing); effective communication composite; care coordination; patient overall satisfaction; patient engagement composite; shared decision-making; caregiver support composite; quality of care transitions from ACM to hospice composite **Modifications to Risk Tracks or Risk Adjustment to Address This Population:** The use of episode-based regression analyses of previous encounters of advanced illness to set risk adjusted spending goals **Modifications to Performance-Based Payment to Address This Population:** Quality bonus payment from shared savings **Modifications to Benchmarking to Address This Population:** Benchmarks would be based on trended historical benchmarks.

Submitter, Submitter Type, Proposal Name, and PTAC Recommendation and Date	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Patients with Complex Chronic Conditions or Serious Illnesses	Performance Measurement Features for Patients with Complex Chronic Conditions or Serious Illnesses
		Conditions or Serious Illnesses: PBPM payments with potential for quality-based bonus payment. Further, a partial advanced APM incentive where providers with a 75% enrollment of patients with advanced illness will receive a 5% bonus payment for professional fees.	
Hackensack Meridian Health and Cota (HMH/Cota) *(Regional/local multispecialty practice or health system)* [Oncology Bundled Payment Program Using CNA-Guided Care](#) Recommended for limited-scale testing, 9/8/2017	**Clinical Focus:** Cancer care **Providers:** Oncologists (medical, radiation, and surgical) and other affiliated physicians **Setting:** Inpatient; outpatient; home **Patient Population:** Oncology patients (breast, colon, rectal, and lung cancer)	**Overall Model Design Features:** Oncology Bundled Payment Program proposes to use Cota Nodal Address (CNA)-Guided Care to diagnose patients and assess treatment needed. **Eligibility Criteria:** The proposed model is for Medicare providers in the HMH health system who have Medicare patients with breast, colon, rectal, or lung cancer. Beneficiaries must receive care within HMH; have a recent diagnosis of breast, colon, rectal, or lung cancer; and have a CNA. **Benefit Components for Patients with Complex Chronic Conditions or Serious Illnesses:** CNA-Guided Care to diagnose and inform treatment needed based on data **Flexibilities for Patients with Complex Chronic Conditions or Serious Illnesses:** CNA-Guided Care can provide alternative options of care if needed (e.g., patient wants treatment options other than chemotherapy). **Care Coordination and/or Care Transition Approaches for Patients with Complex Chronic Conditions or Serious Illnesses:** Use of the EHR system (Epic) by all participating providers; team of care coordinators within PCP practices; care management module (Healthy Planet) for all patient care plans **Financial Incentives to Enhance Participation by Providers Caring for Patients with Complex Chronic**	**Measures Specific to Patients with Complex Chronic Conditions or Serious Illnesses:** Quality: surgery, oncology, and genetics measures for breast cancer; surgery and oncology measures for colorectal cancer; surgery and oncology for lung cancer; oncology, infection monitoring, Cota analytics, risk management, finance monitoring, reliability for all disease groups. Utilization: physician visits, services. Spending: total cost of care; Patient Experience: patient-reported outcomes from Press Ganey, College of Surgeons, Oncology Care Model (OCM), Group Practice Reporting Outcome (GPRO), and national guidelines concerning pain management and guidelines, Nurse Communication quarterly Press Ganey report, Doctor Communication quarterly Press Ganey report, Responsiveness of Hospital Staff quarterly Press Ganey report, Pain Management quarterly Press Ganey report, Communication About Medicines quarterly Press Ganey report, Discharge/Home Care Information quarterly Press Ganey report, Hospital CAHPS 3 Item Care Transition Measure quarterly Press Ganey report, Overall Rating Hospital quarterly Press Ganey report, Quietness of Hospital Environment quarterly Press Ganey report, Willingness to Recommend Hospital quarterly Press Ganey report **Modifications to Risk Tracks or Risk Adjustment to Address This Population:** Will use CNA to adjust for relative patient risk **Modifications to Performance-Based Payment to Address This Population:** Providers may receive higher compensation if performance measures are met. **Modifications to Benchmarking to Address This Population:** Will use a three-year retrospective baseline

Submitter, Submitter Type, Proposal Name, and PTAC Recommendation and Date	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Patients with Complex Chronic Conditions or Serious Illnesses	Performance Measurement Features for Patients with Complex Chronic Conditions or Serious Illnesses
		Conditions or Serious Illnesses: Bundled payment to cover all aspects of patients' oncology care	
New York City Department of Health and Mental Hygiene (NYC DOHMH) *(Public health provider)* **Multi-provider, bundled episode-of-care payment model for chronic hepatitis C virus (HCV) using care coordination by employed physicians in hospital outpatient clinics** Not recommended, 12/18/2017	**Clinical Focus:** Hepatitis C virus (HCV) **Providers:** Primary care and internal medicine physicians (infectious disease specialists, gastroenterologists) **Setting:** Hospital-based outpatient clinics **Patient Population:** Patients with HCV	**Overall Model Design Features:** The Project INSPIRE Model proposes integrated medical, behavioral, and social services for patients with HCV. **Eligibility Criteria:** There are no explicit requirements listed for providers; however, the model targets physicians at hospital-based outpatient clinics; beneficiaries must have at least two chronic diseases. **Benefit Components for Patients with Complex Chronic Conditions or Serious Illnesses:** Provide integrated/coordinated care, medication adherence support, and telehealth services **Flexibilities for Patients with Complex Chronic Conditions or Serious Illnesses:** N/A **Care Coordination and/or Care Transition Approaches for Patients with Complex Chronic Conditions or Serious Illnesses:** This model utilizes care coordinators who document HCV treatment, including initiating care coordination, developing a care coordination plan, and attaining sustained virologic response (SVR). **Financial Incentives to Enhance Participation by Providers Caring for Patients with Complex Chronic Conditions or Serious Illnesses**: Bundled payment and potential shared savings	**Measures Specific to Patients with Complex Chronic Conditions or Serious Illnesses:** Quality: risk-adjusted facility-based SVR score; Utilization: ED visit rate. Spending: Part B payments **Modifications to Risk Tracks or Risk Adjustment to Address This Population:** The SVR score is adjusted for demographic and clinical attributes. **Modifications to Performance-Based Payment to Address This Population:** Bonus from shared savings; greatest bonuses to those providers who cure HCV patients with fibrosis or cirrhosis **Modifications to Benchmarking to Address This Population:** N/A
Renal Physicians Association (RPA) *(Provider association and specialty society)*	**Clinical Focus:** ESRD **Providers:** Nephrologists, PCPs	**Overall Model Design Features:** The Incident ESRD Clinical Episode Payment Model proposes care coordination and renal transplantation, if applicable, for dialysis patients transitioning from chronic kidney disease (CKD) to ESRD (six-month episodes of care).	**Measures Specific to Patients with Complex Chronic Conditions or Serious Illnesses:** Quality measures: Advanced Care Planning; Catheter % for in-center hemodialysis (ICHD) (90- and 180-day); Optimal start: day 1 of outpatient dialysis with no catheter in place (ICHD/home hemodialysis [HHD]) or initiate dialysis on peritoneal dialysis (PD); Fistula rate of all permanent vascular

Submitter, Submitter Type, Proposal Name, and PTAC Recommendation and Date	Clinical Focus, Providers, Setting, and Patient Population	Components Relevant to Patients with Complex Chronic Conditions or Serious Illnesses	Performance Measurement Features for Patients with Complex Chronic Conditions or Serious Illnesses
Incident ESRD Clinical Episode Payment Model Recommended for implementation, 12/18/2017	**Setting:** Dialysis centers **Patient Population:** Patients with incident ESRD	**Eligibility Criteria:** Beneficiaries must have ESRD and be transitioning to dialysis. **Benefit Components for Patients with Complex Chronic Conditions or Serious Illnesses:** Care coordination, patient education, access to dialysis modality options, and advance care planning **Flexibilities for Patients with Complex Chronic Conditions or Serious Illnesses:** Offer medical management as an alternative to patients who may not benefit from dialysis **Care Coordination and/or Care Transition Approaches for Patients with Complex Chronic Conditions or Serious Illnesses:** Care coordination between PCP and specialists, including vascular surgeons; coordinating dialysis care in outpatient settings **Financial Incentives to Enhance Participation by Providers Caring for Patients with Complex Chronic Conditions or Serious Illnesses:** Shared savings for the six-month episode of care; bonus payment for patients receiving a kidney transplant	access for ICHD and HDD (180 day); Home dialysis % (PD and HHD); Referral to transplant; Patient Centeredness: Karnofsky Functionality Score. Spending measure: Medicare Part A and Part B spending. Patient experience measure: Patient-Reported Outcomes Measurement Information Systems (PROMIS) **Modifications to Risk Tracks or Risk Adjustment to Address This Population:** HCC scores relative to an average risk patient **Modifications to Performance-Based Payment to Address This Population:** Score on quality measures will decide amount of shared savings received **Modifications to Benchmarking to Address This Population:** Will use historical expenditures, specific to each participant's Healthcare Referral Region, of patients' first six months on dialysis

Appendix E. Summary of Model Features and Characteristics Related to Other Programs that Focus on Patients with Complex Chronic Conditions or Serious Illnesses

Overview of Methodology Used to Review the Other Programs

Other programs included a CMS program – Chronic Condition Special Needs Plans (C-SNPs); a Medicaid program – Health Homes; and a commercial program – Humana Chronic Kidney Disease. The available information on the C-SNPs', Health Homes', and Humana's websites was reviewed. This included a program overview, evaluation reports and findings, summaries, fact sheets, press releases, and, for C-SNPs, the Medicare Managed Care Manual. Information found in these materials was used to summarize the program's main design features, including benefit components, flexibilities, care coordination approaches, financial incentives, performance measures, and modifications to risk adjustment or benchmarking for patients with complex chronic conditions or serious illnesses.

Exhibit E1. Characteristics of Other Programs that Focus on Patients with Complex Chronic Conditions or Serious Illnesses

Program Name	Clinical Focus, Providers, Setting, Patient Population	Components and Financial Incentives Relevant to Patients with Complex Chronic Conditions or Serious Illnesses	Performance Measurement Features for Patients with Complex Chronic Conditions or Serious Illnesses	Lessons Learned Related to Patients with Complex Chronic Conditions or Serious Illnesses
Chronic Condition Special Needs Plans (C-SNPs) *Ongoing* Years active: 2008-present	**Clinical Focus:** Severe or disabling chronic conditions **Providers:** Medicare Advantage Organizations (MAOs) **Setting:** Outpatient; inpatient **Patient Population:** Patients with severe or disabling chronic conditions	**Overall Model Design Features:** C-SNPs are special needs plans (SNPs) for beneficiaries with select severe or disabling chronic conditions. There are 15 chronic conditions for which MAOs can offer a C-SNP in the following ways: 1) for one of the 15 approved chronic conditions; 2) for a predetermined group of conditions that are clinically linked; or 3) for a group of one or more of the conditions as decided by the MAO. **Eligibility Criteria:** MAOs must offer a plan benefit package (PBP) beyond what is required in Medicare Parts A and B and beyond care coordination requirements for coordinated care plans (CCPs); MAOs must also offer Part D prescription drug coverage. Beneficiaries must have at least one of the 15 approved chronic conditions and "have one or more comorbid and medically complex chronic conditions that is life threatening or significantly limits overall health or function, have a high risk of hospitalization or other adverse health outcomes, and require intensive care coordination." **Benefit Components for Patients with Complex Chronic Conditions or Serious Illnesses:** Supplemental health benefits, specialized provider networks, screenings, social services, and wellness programs **Flexibilities for Patients with Complex Chronic Conditions or Serious Illnesses:** N/A	**Measures Specific to Patients with Complex Chronic Conditions or Serious Illnesses:** Follows the MA Star Ratings Program – there are three SNP-specific measures: SNP Care Management; Care for Older Adults – Pain Assessment; and Care for Older Adults – Medication Review. **Modifications to Risk Tracks or Risk Adjustment to Address This Population:** HCC risk scores based on individuals with similar risk profiles and chronic health conditions **Modifications to Performance-Based Payment to Address This Population:** Follows the MA Star Ratings Program: Star Ratings are used to determine 1) whether a plan is eligible for a bonus payment; and 2) the percentage increase in payment benchmarks and rebate amounts. Plan contracts must obtain a 4-, 4.5-, or 5-Star Rating. **Modifications to Benchmarking to Address This Population:** N/A	A study published in the Journal of the American Medical Association (JAMA) found that beneficiaries in C-SNPs had lower hospitalization and mortality rates compared with similar patients not in C-SNPs.[vii]

[vii] Becker BN, Luo J, Gray KS, Colson C, Cohen DE, McMurray S, Gregory B, Lohmeyer N, Brunelli SM. Association of Chronic Condition Special Needs Plan With Hospitalization and Mortality Among Patients With End-Stage Kidney Disease. JAMA Network Open. 2020 Nov 2;3(11):e2023663. doi: 10.1001/jamanetworkopen.2020.23663.

Program Name	Clinical Focus, Providers, Setting, Patient Population	Components and Financial Incentives Relevant to Patients with Complex Chronic Conditions or Serious Illnesses	Performance Measurement Features for Patients with Complex Chronic Conditions or Serious Illnesses	Lessons Learned Related to Patients with Complex Chronic Conditions or Serious Illnesses
		Care Coordination and/or Care Transition Approaches for Patients with Complex Chronic Conditions or Serious Illnesses: Part D prescription drug coverage **Financial Incentives to Enhance Participation by Providers Caring for Patients with Complex Chronic Conditions or Serious Illnesses:** MAOs may offer no or lower cost sharing to the beneficiary.		

Program Name	Clinical Focus, Providers, Setting, Patient Population	Components and Financial Incentives Relevant to Patients with Complex Chronic Conditions or Serious Illnesses	Performance Measurement Features for Patients with Complex Chronic Conditions or Serious Illnesses	Lessons Learned Related to Patients with Complex Chronic Conditions or Serious Illnesses
Health Homes (Medicaid program) *Ongoing* Years active: 2011-present	**Clinical Focus:** Chronic conditions **Providers:** Physicians, clinical practices, home health agencies, community health centers **Setting:** Inpatient; outpatient; home **Patient Population:** Patients with multiple (or at risk of multiple) chronic conditions	**Overall Model Design Features:** Health Homes is an optional Medicaid Plan benefit where states can form Health Homes to coordinate care for Medicaid beneficiaries with chronic conditions. **Eligibility Criteria:** Medicaid beneficiaries must either have two or more chronic conditions, one chronic condition and be at risk for a second, or have one "serious and persistent mental health condition." **Benefit Components for Patients with Complex Chronic Conditions or Serious Illnesses:** Comprehensive care management, care coordination, transitional care and follow-up, family support, and referral to community services **Flexibilities for Patients with Complex Chronic Conditions or Serious Illnesses:** N/A **Care Coordination and/or Care Transition Approaches for Patients with Complex Chronic Conditions or Serious Illnesses:** Health Homes provide integrated and coordinated care for all care – primary, acute, behavioral health, and long-term services and supports. **Financial Incentives to Enhance Participation by Providers Caring for Patients with Complex Chronic Conditions or Serious Illnesses:** States collect a 90% Federal Medical Assistance Percentage (FMAP) for certain health home services.	**Measures Specific to Patients with Complex Chronic Conditions or Serious Illnesses:** Adult body mass index (BMI) assessment; prevention quality indicator (PQI) 92: chronic condition composite; care transition - transition record transmitted to health care professional; follow-up after hospitalization for mental illness; plan - all cause readmission; screening for clinical depression and follow-up plan; initiation and engagement of alcohol and other drug dependence treatment; controlling high blood pressure **Modifications to Risk Tracks or Risk Adjustment to Address This Population:** N/A **Modifications to Performance-Based Payment to Address This Population:** Providers required to report quality measures to receive payment **Modifications to Benchmarking to Address This Population:** N/A	Participants reported more core quality measures in 2022 than in 2021. [viii] Further, in 2022, there were 38 Health Home programs, up from 37 in 2021. Seventeen of them were for serious mental illness; eight were for chronic conditions, and seven were hybrid. All 38 reported at least one measure. [ix]

[viii] Centers for Medicare & Medicaid Services. Medicaid & CHIP. Quality of Care for Children and Adults in Medicaid Health Home Programs: Overview of Findings from the 2022 Health Home Core Set. March 2024. https://www.medicaid.gov/media/172621

[ix] Centers for Medicare & Medicaid Services. Medicaid & CHIP. Quality of Care for Children and Adults Enrolled in Medicaid Health Homes: Findings from the 2022 Health Home Core Set; Chart Pack. March 2024. https://www.medicaid.gov/media/172626

Program Name	Clinical Focus, Providers, Setting, Patient Population	Components and Financial Incentives Relevant to Patients with Complex Chronic Conditions or Serious Illnesses	Performance Measurement Features for Patients with Complex Chronic Conditions or Serious Illnesses	Lessons Learned Related to Patients with Complex Chronic Conditions or Serious Illnesses
Humana Chronic Kidney Disease Programs (Commercial program) *Ongoing* Years active: 2019-present	**Clinical Focus:** Chronic kidney disease **Providers:** Physicians, specialists **Setting:** Broad **Patient Population:** Patients with chronic kidney disease	**Overall Model Design Features:** Humana chronic kidney disease programs provide patients with a care manager to support the patient with all care delivery needs. **Eligibility Criteria:** Patients must meet ESRD eligibility requirements. **Benefit Components for Patients with Complex Chronic Conditions or Serious Illnesses:** Care coordination, medication reviews and adherence support, social and behavioral support, chronic disease education, palliative care coordination, dialysis education, telehealth services **Flexibilities for Patients with Complex Chronic Conditions or Serious Illnesses:** N/A **Care Coordination and/or Care Transition Approaches for Patients with Complex Chronic Conditions or Serious Illnesses:** Care manager **Financial Incentives to Enhance Participation by Providers Caring for Patients with Complex Chronic Conditions or Serious Illnesses:** N/A	**Measures Specific to Patients with Complex Chronic Conditions or Serious Illnesses:** N/A **Modifications to Risk Tracks or Risk Adjustment to Address This Population:** N/A **Modifications to Performance-Based Payment to Address This Population:** N/A **Modifications to Benchmarking to Address This Population:** N/A	N/A

Appendix F. Areas for Future Exploration and Research

Please note the items listed below may be better addressed through the Request for Input (RFI), subject matter expert (SME) discussions or listening sessions, roundtable panel discussions, or another research approach. They are captured here for further exploration.

I.   Additional work is needed to develop a standardized definition of complex chronic conditions that could be adopted by all or many agencies and organizations to promote better identification, care delivery, and improved outcomes for patients with complex chronic conditions or serious illnesses.

II.   Future work is needed to evaluate the performance of innovative identification methods of patients with complex chronic conditions or serious illnesses, particularly related to identifying patients at risk of rising cost. For example, methods using artificial intelligence could improve the identification of higher-risk patients.

III.   Clinical guidelines for managing multiple chronic conditions are needed, potentially focusing on common clusters of chronic conditions. Guidelines could help to identify the appropriate number and types of visits (and to which providers) for effectively managing the needs of patients with complex chronic conditions or serious illnesses.

IV.   Care models designed for patients with serious illnesses typically do not include elements such as telehealth, caregiver support, decision support tools, or bereavement. Additional work is needed to incorporate these elements into models and understand the impact these elements may have on addressing the needs of patients with complex chronic conditions or serious illnesses.

V.   Additional work is needed to understand how different value-based payment models impact equity among different clinically high-risk groups.

Appendix G. Annotated Bibliography

Forthcoming

Appendix H. References

[1] MedPAC analysis of the Medicare Current Beneficiary Survey (MCBS), 2020. https://www.medpac.gov/wp-content/uploads/2023/07/July2023_MedPAC_DataBook_SEC.pdf

[2] MedPAC. A Data Book: Health Care Spending and the Medicare Program. July 2023.

[3] Joynt KE, Figueroa JF, Beaulieu N, Wild RC, Orav EJ, Jha AK. Segmenting High-cost Medicare Patients into Potentially Actionable Cohorts. *Healthcare*. 2017;5:62-67. doi:10.1016/j.hjdsi.2016.11.002

[4] Zhang Y, Grinspan Z, Khullar D, Unruh MA, Shenkman E, Cohen A, et al. Developing an Actionable Patient Taxonomy to Understand and Characterize High-cost Medicare Patients. 2020:8. *Healthcare*. doi:10.1016/j.hjdsi.2019.100406

[5] Pearl R, Madvig P. Managing the Most Expensive Patients: A New Primary-care Model can Lower Costs and Improve Outcomes. Harvard Business Review. January-February 2020;68-76. https://hbr.org/2020/01/managing-the-most-expensive-patients

[6] Loeb D, Binswanger IA, Candrian C, Bayliss EA. Primary Care Physician Insights into a Typology of the Complex Patient in Primary Care. *Ann Fam Med*. 2015;13:451-455. doi:10.1370/afm.1840

[7] Kelley AS, Covinsky KE, Gorges RJ, McKendrick K, Bollens-Lund E, Morrison RS, et al. Identifying Older Adults with Serious Illness: A Critical Step toward Improving the Value of Health Care. *HSR*. 2017;52(1):113-131. doi:10.1111/1475-6773.12479

[8] Sapra KJ, Yang W, Walczak NB, Cha SS. Identifying High-Cost Medicare Beneficiaries: Impact of Neighborhood Socioeconomic Disadvantage. *Pop Health Mgmt*. 2020;23(1). doi:10.1089/pop.2019.0016

[9] Agarwal SD, Barnett ML, Souza J, Landon BE. Adoption of Medicare's Transitional Care Management and Chronic Care Management Codes in Primary Care. *JAMA*. 2018;320(24):2596. doi:10.1001/jama.2018.16116

[10] Health Care Payment Learning & Action Network. *Accelerating and Aligning Population-Based Payment: Patient Attribution*. June 30, 2016. Accessed March 5, 2024. https://hcp-lan.org/pa-whitepaper/

[11] MedPAC. A Data Book: Health Care Spending and the Medicare Program. July 2023. https://www.medpac.gov/document/july-2023-data-book-health-care-spending-and-the-medicare-program/

[12] Wallis CJD, Poon SJ, Lai P, Liliana P, Buntin MB. Trends in Medicare Spending across Strata of Resource Utilization among Older Individuals in the United States. *EClinicalMedicine*. 2021;36. doi:10.1016/j.eclinm.2021.100873

[13] MedPAC. A Data Book: Health Care Spending and the Medicare Program. July 2023.

[14] Pearl R, Madvig P. Managing the Most Expensive Patients: A New Primary-care Model can Lower Costs and Improve Outcomes. Harvard Business Review. January-February 2020;68-76. https://hbr.org/2020/01/managing-the-most-expensive-patients

[15] Joynt KE, Figueroa JF, Beaulieu N, Wild RC, Orav EJ, Jha AK. Segmenting High-cost Medicare Patients into Potentially Actionable Cohorts. *Healthcare*. 2017;5:62-67. doi:10.1016/j.hjdsi.2016.11.002

[16] Zhang Y, Grinspan Z, Khullar D, Unruh MA, Shenkman E, Cohen A, et al. Developing an Actionable Patient Taxonomy to Understand and Characterize High-cost Medicare Patients. 2020:8. *Healthcare*. doi:10.1016/j.hjdsi.2019.100406

[17] Pearl R, Madvig P. Managing the Most Expensive Patients: A New Primary-care Model can Lower Costs and Improve Outcomes. Harvard Business Review. January-February 2020;68-76. https://hbr.org/2020/01/managing-the-most-expensive-patients

[18] Pearl R, Madvig P. Managing the Most Expensive Patients: A New Primary-care Model can Lower Costs and Improve Outcomes. Harvard Business Review. January-February 2020;68-76. https://hbr.org/2020/01/managing-the-most-expensive-patients

[19] Joynt KE, Figueroa JF, Beaulieu N, Wild RC, Orav EJ, Jha AK. Segmenting High-cost Medicare Patients into Potentially Actionable Cohorts. *Healthcare*. 2017;5:62-67. doi:10.1016/j.hjdsi.2016.11.002

[20] Joynt KE, Gawande AA, Orav EJ, Jha AK. Contribution of Preventable Acute Care Spending to Total Spending for High-Cost Medicare Patients. *JAMA*. 2013;309(24):2572-2578. doi:10.1001/jama.2013.7103

[21] Powers BW, Yan J, Zhu J, Linn KA, Jain SH, Kowalski JL, et al. Subgroups of High-cost Medicare Advantage Patients: An Observational Study. *J Gen Intern Med*. 2018;34(2):218-225. doi: 10.1007/s11606-018-4759-1

[22] Zhang Y, Grinspan Z, Khullar D, Unruh MA, Shenkman E, Cohen A, et al. Developing an Actionable Patient Taxonomy to Understand and Characterize High-cost Medicare Patients. 2020:8. *Healthcare*. doi:10.1016/j.hjdsi.2019.100406

[23] Joynt KE, Figueroa JF, Beaulieu N, Wild RC, Orav EJ, Jha AK. Segmenting High-cost Medicare Patients into Potentially Actionable Cohorts. *Healthcare*. 2017;5:62-67. doi:10.1016/j.hjdsi.2016.11.002

[24] Zhang Y, Grinspan Z, Khullar D, Unruh MA, Shenkman E, Cohen A, et al. Developing an Actionable Patient Taxonomy to Understand and Characterize High-cost Medicare Patients. 2020:8. *Healthcare*. doi:10.1016/j.hjdsi.2019.100406

[25] Johnson TL, Rinehart DJ, Durfee J, Brewer D, Batal H, Blum J, et al. For Many Patients Who Use Large Amounts of Health Care Services, the Need is Intense yet Temporary. *Health Affairs*. 2015;34(8):1312-1319. doi: 10.1377/hlthaff.2014.1186

[26] Centers for Disease Control and Prevention. About Chronic Diseases. https://www.cdc.gov/chronicdisease/about/index.htm

[27] Lochner KA, Cox CS. Prevalence of Multiple Chronic Conditions among Medicare Beneficiaries, United States, 2010. *Prev Chronic Dis*. 2013;10. doi:10.5888/pcd10.120137

[28] Sevick MA, Trauth JM, Ling BS, Anderson RT, Piatt GA, Kilbourne AM, et al. Patients with Complex Chronic Diseases: Perspectives on Supporting Self-Management. *J Gen Intern Med*. 2007;22(Suppl):438-444. doi:10.1007/s11606-007-0316-z

[29] Hales CM, Servais J, Martin CB, Kohen D. Prescription Drug Use among Adults Aged 40-79 in the United States and Canada. NCHS Data Brief, no. 347. Hyattsville, MD: National Center for Health Statistics. 2019.

[30] Johns Hopkins Medicine. Polypharmacy in Adults 60 and Older. https://www.hopkinsmedicine.org/health/wellness-and-prevention/polypharmacy-in-adults-60-and-older

[31] Kelley AS, Bollens-Lund E. Identifying the Population with Serious Illness: The "Denominator" Challenge. *J Pall Med.* 2018;21(S2):S7-S16. doi:10.1089/jpm.2017.0548

[32] Johnson TL, Rinehart DJ, Durfee J, Brewer D, Batal H, Blum J, et al. For Many Patients Who Use Large Amounts of Health Care Services, the Need is Intense yet Temporary. *Health Affairs*. 2015;34(8):1312-1319. doi: 10.1377/hlthaff.2014.1186

[33] Hayes SL, Salzberg CA, McCarthy D, Radley DC, Abrams MK, Shah T, et al. High-Need, High-Cost Patients: Who Are They and How Do They Use Health Care? The Commonwealth Fund Issue Brief. August 2016. https://www.commonwealthfund.org/publications/issue-briefs/2016/aug/high-need-high-cost-patients-who-are-they-and-how-do-they-use

[34] Ogelsby AK, Secnik K, Barron J, Al-Zakwani I, Lage MJ. The Association Between Diabetes Related Medical Costs and Glycemic Control: A Retrospective Analysis. *Cost Eff and Resourc Alloc*. 2006;4(1). doi:10.1186/1478-7547-4-1

[35] Sheridan P, LeBrett WG, Triplett DP, Roeland EJ, Bruggeman AR, Yeung HN, et al. Cost Savings Associated with Palliative Care among Older Adults with Advanced Cancer. *Am J Hosp Palliat Care*. 2021;38(10):1250-1257. doi:10.1177/1049909120986800

[36] Rosano A, Loha CA, Falvo R, van der Zee J, Ricciardi W, Guasticchi G, et al. The Relationship between Avoidable Hospitalization and Accessibility to Primary Care: A Systematic Review. *Eur J Pub Health*. 2012;23(3): 356-360.

[37] McDermott KW, Jiang HJ. Characteristics and Costs of Potentially Preventable Inpatient Stays, 2017. HCUP Statistical Brief #259. June 2020. Agency for Healthcare Research and Quality, Rockville, MD. https://hcup-us.ahrq.gov/reports/statbriefs/sb259-Potentially-Preventable-Hospitalizations-2017.jsp

[38] Khullar D, Zhang Y, Kaushal R. Potentially Preventable Spending among High-Cost Medicare Patients: Implications for Healthcare Delivery. *J Gen Int Med*. 2020;35(10):2845-2852. doi:10.1007/s11606-020-05691-8

[39] Khullar D, Zhang Y, Kaushal R. Potentially Preventable Spending among High-Cost Medicare Patients: Implications for Healthcare Delivery. *J Gen Int Med*. 2020;35(10):2845-2852. doi:10.1007/s11606-020-05691-8

[40] Figueroa JF, Zhou X, Jha AK. Characteristics and Spending Patterns of Persistently High-Cost Medicare Patients. *Health Affairs*. 2019;38(1):107-114. doi:10.1377.hlthaff.0218.05160

[41] Haas LR, Takahashi PY, Shah ND, Stroebel RJ, Bernard ME, Finnie DM, et al. Risk-stratification Methods for Identifying Patients for Care Coordination. *A J Manag Care*. 2013;19(9):725-732.

[42] Lee ES, Koh HL, Ho EQ, Teo SH, Wong FY, Ryan BL, et al. Systematic Review on the Instruments Used for Measuring the Association of the Level of Multimorbidity and Clinically Important Outcomes. *BMJ Open*. 2021;11. doi:10.1136/bmjopen-2020-041219

[43] Loeb D, Binswanger IA, Candrian C, Bayliss EA. Primary Care Physician Insights into a Typology of the Complex Patient in Primary Care. *Ann Fam Med*. 2015;13:451-455. doi:10.1370/afm.1840

[44] Hibbard JH, Greene J, Sacks RM, Overton V, Parrotta C. Improving Population Health Management Strategies: Identifying Patients Who are More Likely to be Users of Avoidable Costly Care and Those More Likely to Develop a New Chronic Disease. *HSR*. 2017;52(4):1297-1309. doi:10.1111/1475-6773.12545

[45] Kelley AS, Covinsky KE, Gorges RJ, McKendrick K, Bollens-Lund E, Morrison RS, et al. Identifying Older Adults with Serious Illness: A Critical Step toward Improving the Value of Health Care. *HSR*. 2017;52(1):113-131. doi:10.1111/1475-6773.12479

[46] Sapra KJ, Yang W, Walczak NB, Cha SS. Identifying High-Cost Medicare Beneficiaries: Impact of Neighborhood Socioeconomic Disadvantage. *Pop Health Mgmt*. 2020;23(1). doi:10.1089/pop.2019.0016

[47] Centers for Medicare & Medicaid Services. Comprehensive Primary Care Initiative. https://www.cms.gov/priorities/innovation/innovation-models/comprehensive-primary-care-initiative

[48] Reddy A, Sessums L, Gupta R, Jin J, Day T, Finke B, et al. Risk Stratification Methods and Provision of Care Management Services in Comprehensive Primary Care Initiative Practices. *Ann Fam Med*. 2017;15(5):451-454. doi:10.1370/afm.2124

[49] Ansah JP, Chiu CT. Projecting the chronic disease burden among the adult population in the United States using a multi-state population model. *Frontiers in Public Health*. 2023;10:1082183. doi:10.3389/fpubh.2022.1082183

[50] Clarke JL, Bourn S, Skoufalos A, Beck EH, Castillo DJ. An innovative approach to health care delivery for patients with chronic conditions. *Population Health Management*. 2017;20(1):23-30. doi:10.1089/pop.2016.0076

[51] Clarke JL, Bourn S, Skoufalos A, Beck EH, Castillo DJ. An innovative approach to health care delivery for patients with chronic conditions. *Population Health Management*. 2017;20(1):23-30. doi:10.1089/pop.2016.0076

[52] Warshaw G. Introduction: Advances and challenges in care of older people with chronic illness. *Generations*. 2006;30:5-10.

[53] Warshaw G. Introduction: Advances and challenges in care of older people with chronic illness. *Generations*. 2006;30:5-10.

[54] Wallace E, Salisbury C, Guthrie B, Lewis C, Fahey T, Smith SM. Managing patients with multimorbidity in primary care. *BMJ*. 2015;350:h176-h176. doi:10.1136/bmj.h176

[55] NORC at the University of Chicago. Analysis of 2019 Medicare Fee-for-Service (FFS) Claims for Chronic Care Management (CCM) and Transitional Care Management (TCM) Services. 2022.

[56] Agarwal SD, Barnett ML, Souza J, Landon BE. Adoption of Medicare's Transitional Care Management and Chronic Care Management Codes in Primary Care. *JAMA*. 2018;320(24):2596. doi:10.1001/jama.2018.16116

[57] Agarwal SD, Barnett ML, Souza J, Landon BE. Adoption of Medicare's Transitional Care Management and Chronic Care Management Codes in Primary Care. *JAMA*. 2018;320(24):2596. doi:10.1001/jama.2018.16116

[58] Boyd CM, Darer J, Boult C, Fried LP, Boult L, Wu AW. Clinical practice guidelines and quality of care for older patients with multiple comorbid diseases: Implications for pay for performance. *JAMA*. 2005;294:716-24. doi:10.1001/jama.294.6.716

[59] Wyatt KD, Stuart LM, Brito JP, et al. Out of context: Clinical practice guidelines and patients with multiple chronic conditions: a systematic review. *Medical Care*. 2014;52(Supplement 2): S92-S100. doi:10.1097/MLR.0b013e3182a51b3d

[60] Wallace E, Salisbury C, Guthrie B, Lewis C, Fahey T, Smith SM. Managing patients with multimorbidity in primary care. *BMJ*. 2015;350:h176-h176. doi:10.1136/bmj.h176

[61] Fiscella K, Epstein RM. So much to do, so little time: Care for the socially disadvantaged and the 15-minute visit. *Arch Intern Med*. 2008;168(17):1843. doi:10.1001/archinte.168.17.1843

[62] Linzer M, Bitton A, Tu SP, Plews-Ogan M, Horowitz KR, Schwartz MD. The end of the 15–20 minute primary care visit. *J Gen Intern Med*. 2015;30(11):1584-1586. doi:10.1007/s11606-015-3341-3

[63] Wilson AD, Childs S. Effects of interventions aimed at changing the length of primary care physicians' consultation. In The Cochrane Collaboration, ed. Cochrane Database of Systematic Reviews. John Wiley & Sons, Ltd; 2006:CD003540.pub2. doi:10.1002/14651858.CD003540.pub2

[64] Mercer SW, Fitzpatrick B, Gourlay G, Vojt G, McConnachie A, Watt GC. More time for complex consultations in a high-deprivation practice is associated with increased patient enablement. *Br J Gen Pract*. 2007;57(545):960-966. doi:10.3399/096016407782604910

[65] Colla, C, Ganguli, Ishani. Low-Value Care: A Multilayer Problem Requiring Multilayer Solutions. Annals of Internal Medicine, 2024, doi:10.7326/M24-0862

[66] Verkerk, E, van Dulmen, Simone, Westert, Gert, Hooft, Lotty, Heus, Pauline, Kool, Rudolf. Reducing low-value care: what can we learn from eight de-implementation studies in the Netherlands? BMJ Open Quality. 2022; 10.1136/bmjoq-2021-001710

[67] Verkerk, E, van Dulmen, Simone, Westert, Gert, Hooft, Lotty, Heus, Pauline, Kool, Rudolf. Reducing low-value care: what can we learn from eight de-implementation studies in the Netherlands? BMJ Open Quality. 2022; 10.1136/bmjoq-2021-001710

[68] Cohen-Mekelburg, S, Kurlander, J, Steppe, E et al. Bridging the divide—Understanding primary care and specialty care perspectives on chronic disease co-management: A national survey. *J Gen Intern Med.* 2021;36:2164–2166. doi:10.1007/s11606-020-05877-0

[69] Cohen-Mekelburg, S, Kurlander, J, Steppe, E et al. Bridging the divide—Understanding primary care and specialty care perspectives on chronic disease co-management: A national survey. *J Gen Intern Med.* 2021;36:2164–2166. doi:10.1007/s11606-020-05877-0

[70] Cohen-Mekelburg, S, Kurlander, J, Steppe, E et al. Bridging the divide—Understanding primary care and specialty care perspectives on chronic disease co-management: A national survey. *J Gen Intern Med.* 2021;36:2164–2166. doi:10.1007/s11606-020-05877-0

[71] Hohmann, N, McDaniel, C, et al. Patient perspectives on primary care and oncology care coordination in the context of multiple chronic conditions: A systematic review. *Research in Social and Administrative Pharmacy*. 2020;16(8):1003-1016. doi:10.1016/j.sapharm.2019.11.014

[72] Cohen-Mekelburg, S., Kurlander, J., Steppe, E. et al. Bridging the divide—Understanding primary care and specialty care perspectives on chronic disease co-management: A national survey. *J Gen Intern Med MED.* 2021;36:2164–2166. doi:10.1007/s11606-020-05877-0

[73] Lockhart, E, Hawker, G, et al. Engaging primary care physicians in care coordination for patients with complex medical conditions. *Canadian Family Physician*. 2019; 65:e155-e162.

[74] Bayliss, E, Balasubramianian, B, et al. Perspectives in primary care: Implementing patient-centered care coordination for individuals with multiple chronic medical conditions. *Annals of Family Medicine*. 2014;12:500-503. doi:10.1370/afm.1725

[75] She Z, Gaglioti AH, Baltrus P, et al. Primary care comprehensiveness and care coordination in robust specialist networks results in lower emergency department utilization: A network analysis of Medicaid Physician Networks. *Journal of Primary Care & Community Health*. 2020;11. doi:10.1177/2150132720924432

[76] Evaluation of the Community-Based Care Transitions Program: Final Evaluation Report. *Econometrica, Inc*. 2017. https://downloads.cms.gov/files/cmmi/cctp-final-eval-rpt.pdf

[77] Friedman A, Howard J, Shaw EK, Cohen DJ, Shahidi L, Ferrante JM. Facilitators and barriers to care coordination in patient-centered medical homes (PCMHs) from coordinators' perspectives. *The Journal of the American Board of Family Medicine*. 2016;29(1). doi:10.3122/jabfm.2016.01.150175

[78] DuGoff EH, Dy S, Giovannetti ER, Leff B, Boyd CM. Setting standards at the forefront of delivery system reform: Aligning care coordination quality measures for multiple chronic conditions. *Journal for Healthcare Quality*. 2013;35(5):58-69. doi:10.1111/jhq.12029

[79] Wallace E, Salisbury C, Guthrie B, Lewis C, Fahey T, Smith SM. Managing patients with multimorbidity in primary care. *BMJ*. 2015;350:h176-h176. doi:10.1136/bmj.h176

[80] Hajat C, Stein E. The global burden of multiple chronic conditions: A narrative review. *Preventive Medicine Reports*. 2018;12:284-293. doi:10.1016/j.pmedr.2018.10.008

[81] Ploeg J, Northwood M, Duggleby W, et al. Caregivers of older adults with dementia and multiple chronic conditions: Exploring their experiences with significant changes. *Dementia*. 2020;19(8):2601-2620. doi:10.1177/1471301219834423

[82] Clarke JL, Bourn S, Skoufalos A, Beck EH, Castillo DJ. An innovative approach to health care delivery for patients with chronic conditions. *Population Health Management*. 2017;20(1):23-30. doi:10.1089/pop.2016.0076

[83] Tynan A, Draper DA. Getting what we pay for: Innovations lacking in provider payment reform for chronic disease care. *Center for Studying Health System Change.* 2008;6.

[84] Warshaw G. Introduction: Advances and challenges in care of older people with chronic illness. *Generations*. 2006;30:5-10.

[85] Warshaw G. Introduction: Advances and challenges in care of older people with chronic illness. *Generations*. 2006;30:5-10.

[86] Rattray NA, Sico JJ, Cox LM, Russ AL, Matthias MS, Frankel RM. Crossing the communication chasm: Challenges and opportunities in transitions of care from the hospital to the primary care clinic. *The Joint Commission Journal on Quality and Patient Safety*. 2017;43(3):127-137. doi:10.1016/j.jcjq.2016.11.007

[87] Urbanski D, Reichert A, Amelung V. Discharge and transition management in integrated care. In Amelung V, Stein V, Suter E, Goodwin N, Nolte E, Balicer R, eds. Handbook Integrated Care. Springer International Publishing; 2021:437-451. doi:10.1007/978-3-030-69262-9_26

[88] Physician-Focused Payment Model Technical Advisory Committee (2022). Analysis of 2019 Medicare Fee-For-Service (FFS) Claims for Chronic Care Management (CCM) and Transitional Care Management (TCM) Services. https://aspe.hhs.gov/sites/default/files/documents/41fd0a9afffdc5f36bca0656b4f4ca6b/CCM-TCM-Descriptive-Analysis.pdf

[89] Moore Foundation. *Payment Models for Advancing Serious Illness Care*. 2016. Accessed March 5, 2024. https://workforcesummit.ucsf.edu/sites/g/files/tkssra1166/f/Discern%20Serious-Illness-Care-Payment-Models-White-Paper-2016-09-27%20%281%29.pdf

[90] Buttorff C, Ruder T, Bauman M. Multiple chronic conditions in the United States. *RAND Corporation*. 2017. doi:10.7249/TL221

[91] Galama TJ, Van Kippersluis H. A theory of socio-economic disparities in health over the life cycle. *The Economic Journal*. 2019;129(617):338-374. doi:10.1111/ecoj.12577

[92] Yearby R. Racial disparities in health status and access to healthcare: The continuation of inequality in the United States due to structural racism. *American J Econ Sociol*. 2018;77(3-4):1113-1152. doi:10.1111/ajes.12230

[93] Krahn GL, Walker DK, Correa-De-Araujo R. Persons with disabilities as an unrecognized health disparity population. *Am J Public Health*. 2015;105(S2):S198-S206. doi:10.2105/AJPH.2014.302182

[94] Douthit N, Kiv S, Dwolatzky T, Biswas S. Exposing some important barriers to health care access in the rural USA. *Public Health*. 2015;129(6):611-620. doi:10.1016/j.puhe.2015.04.001

[95] Dinh TTH, Bonner A. Exploring the relationships between health literacy, social support, self-efficacy and self-management in adults with multiple chronic diseases. *BMC Health Serv Res*. 2023;23(1):923. doi:10.1186/s12913-023-09907-5

[96] Dinh TTH, Bonner A. Exploring the relationships between health literacy, social support, self-efficacy and self-management in adults with multiple chronic diseases. *BMC Health Serv Res*. 2023;23(1):923. doi:10.1186/s12913-023-09907-5

[97] Krieger J, Higgins DL. Housing and Health: Time again for public health action. *Am J Public Health*. 2002;92(5):758-768. doi:10.2105/AJPH.92.5.758

[98] Pooler JA, Hartline-Grafton H, DeBor M, Sudore RL, Seligman HK. Food insecurity: A key social determinant of health for older adults. *J American Geriatrics Society*. 2019;67(3):421-424. doi:10.1111/jgs.15736

[99] Dinh TTH, Bonner A. Exploring the relationships between health literacy, social support, self-efficacy and self-management in adults with multiple chronic diseases. *BMC Health Serv Res*. 2023;23(1):923. doi:10.1186/s12913-023-09907-5

[100] Pooler JA, Hartline-Grafton H, DeBor M, Sudore RL, Seligman HK. Food insecurity: A key social determinant of health for older adults. *J American Geriatrics Society*. 2019;67(3):421-424. doi:10.1111/jgs.15736

[101] Krieger J, Higgins DL. Housing and Health: Time again for public health action. *Am J Public Health*. 2002;92(5):758-768. doi:10.2105/AJPH.92.5.758

[102] RTI International. Accountable Health Communities (AHC) Model Evaluation: Second Evaluation Report. Published online 2023. https://www.cms.gov/priorities/innovation/data-and-reports/2023/ahc-second-eval-rpt

[103] Mechanic R, Fitch A. Working with ACOs to address social determinants of health. *Health Affairs Forefront*. Accessed February 20, 2024. https://www.healthaffairs.org/do/10.1377/forefront.20230109.448380/full/

[104] Berkowitz SA, Hulberg AC, Placzek H, et al. Mechanisms associated with clinical improvement in interventions that address health-related social needs: A mixed-methods analysis. *Popul Health Manag*. 2019;22(5):399-405. doi:10.1089/pop.2018.0162

[105] Renaud J, McClellan SR, DePriest K, et al. Addressing health-related social needs via community resources: Lessons from accountable health communities. *Health Affairs*. 2023;42(6):832-840. doi:10.1377/hlthaff.2022.01507

[106] U.S. Department of Health and Human Services. Multiple chronic conditions—A strategic framework: Optimum health and quality of life for individuals with multiple chronic conditions. 2010.

[107] NORC at the University of Chicago. The Pennsylvania Rural Health Model: First Annual Report. 2021. https://innovation.cms.gov/data-and-reports/2021/parhm-ar1-full-report

[108] Bardach SH, Schoenberg NE, Tarasenko YN, Fleming ST. Rural residents' perspectives on multiple morbidity management and disease prevention. *J Appl Gerontol*. 2011;30(6):671-699. doi:10.1177/0733464810378106

[109] Moore Foundation. *Payment Models for Advancing Serious Illness Care*. 2016. Accessed March 5, 2024. https://workforcesummit.ucsf.edu/sites/g/files/tkssra1166/f/Discern%20Serious-Illness-Care-Payment-Models-White-Paper-2016-09-27%20%281%29.pdf

[110] Crumley D, Spencer A, Ralls M, Howe G. Building a Medicaid strategy to address health-related social needs. Center for Health Care Strategies, Inc. https://www.chcs.org/media/Tool-Building-a-Medicaid-Strategy-to-Address-HRSNs_042921.pdf

[111] Mechanic R, Fitch A. Working with ACOs to address social determinants of health. *Health Affairs Forefront*. Accessed February 20, 2024. https://www.healthaffairs.org/do/10.1377/forefront.20230109.448380/full/

[112] Centers for Medicare & Medicaid Services. Tsai D. RE: Additional guidance on use of in lieu of services and settings in Medicaid managed care. Published 2023. Accessed February 20, 2024. https://www.medicaid.gov/sites/default/files/2023-12/smd23001.pdf

[113] Centers for Medicare & Medicaid Services. All-State Medicaid and CHIP Call. Published 2022. Accessed February 20, 2024. https://www.medicaid.gov/sites/default/files/2022-12/covid19allstatecall12062022.pdf

[114] Centers for Medicare & Medicaid Services. RE: Opportunities in Medicaid and CHIP to Address Social Determinants of Health (SDOH). Published online 2021. Accessed February 20, 2024. https://www.medicaid.gov/sites/default/files/2022-01/sho21001_0.pdf

[115] Centers for Medicare & Medicaid Services. Coverage of Health-Related Social Needs (HRSN) Services in Medicaid and the Children's Health Insurance Program (CHIP). Published 2023. Accessed February 20, 2024. https://www.medicaid.gov/sites/default/files/2023-11/hrsn-coverage-table.pdf

[116] Hinton E, Published AD. Medicaid authorities and options to address social determinants of health. *KFF*. Published January 29, 2024. Accessed February 20, 2024. https://www.kff.org/medicaid/issue-brief/medicaid-authorities-and-options-to-address-social-determinants-of-health-sdoh/

[117] Moore Foundation. *Payment Models for Advancing Serious Illness Care*. 2016. Accessed March 5, 2024. https://workforcesummit.ucsf.edu/sites/g/files/tkssra1166/f/Discern%20Serious-Illness-Care-Payment-Models-White-Paper-2016-09-27%20%281%29.pdf

[118] Houlihan J, Leffler S. Assessing and addressing social determinants of health. *Primary Care: Clinics in Office Practice*. 2019;46(4):561-574. doi:10.1016/j.pop.2019.07.013

[119] NORC at the University of Chicago and the Department of Health and Human Services' Office of Health Policy of the Office of the Assistant Secretary for Planning and Evaluation (ASPE). 2021. Environmental Scan on Care Coordination in the Context of Alternative Payment Models (APMs) and Physician-Focused Payment Models (PFPMs). https://aspe.hhs.gov/sites/default/files/private/pdf/261946/Jun-2021-CC-Escan.pdf

120 Center for Healthcare Quality & Payment Reform. An Alternative Payment Model for CHRONIC CONDITIONS. Accessed March 5, 2024. https://chqpr.org/downloads/ChronicCondition_APM.pdf

121 Centers for Medicare & Medicaid Services. ACO REACH. Accessed February 20, 2024. https://www.cms.gov/priorities/innovation/innovation-models/aco-reach

122 Centers for Medicare & Medicaid Services. Guiding an Improved Dementia Experience (GUIDE) Model. Accessed April 30, 2024. https://www.cms.gov/priorities/innovation/innovation-models/guide

123 Centers for Medicare & Medicaid Services. Innovation Center Strategy Refresh. 2021. https://www.cms.gov/priorities/innovation/strategic-direction-whitepaper

124 Centers for Medicare & Medicaid Services. Pathways for Specialty Care Coordination and Integration in Population-based Models. Published June 17, 2022. Accessed April 30, 2024. https://www.cms.gov/blog/pathways-specialty-care-coordination-and-integration-population-based-models

125 United States Government Accountability Office. Medicare: Information on the Transition to Alternative Payment Models by Providers in Rural, Health Professional Shortage, or Underserved Areas. 2021. https://www.gao.gov/assets/gao-22-104618.pdf

126 Abt Associates. Findings From the AHRQ Transforming Primary Care Grant Initiative: A Synthesis Report. https://www.ahrq.gov/sites/default/files/wysiwyg/professionals/systems/primary-care/tpc/tpc-synthesis-report.pdf

127 Health Care Payment Learning & Action Network. Accelerating and Aligning Population-Based Payment: Patient Attribution. June 30, 2016. Accessed March 5, 2024. https://hcp-lan.org/pa-whitepaper/

128 McCoy RG, Bunkers KS, Ramar P, Meier SK, Benetti LL, Nesse RE, Naessens JM. Patient attribution: Why the method matters. The American Journal of Managed Care. 2018;24(12):596-603.

129 McCoy RG, Bunkers KS, Ramar P, Meier SK, Benetti LL, Nesse RE, Naessens JM. Patient attribution: Why the method matters. The American Journal of Managed Care. 2018;24(12):596-603.

130 National Quality Forum. Improving Attribution Models: Final Report. 2018. Accessed April 30, 2024. https://www.qualityforum.org/Publications/2018/08/Improving_Attribution_Models_Final_Report.aspx

131 Health Care Payment Learning & Action Network. Accelerating and Aligning Population-Based Payment: Patient Attribution. June 30, 2016. Accessed March 5, 2024. https://hcp-lan.org/pa-whitepaper/

132 Brystana G. Kaufman P, William K. Bleser P, Robert Saunders P, et al. Prospective or Retrospective ACO Attribution Matters for Seriously Ill Patients. 2020;26(12):534-540. doi:10.37765/ajmc.2020.88541

133 Brystana G. Kaufman P, William K. Bleser P, Robert Saunders P, et al. Prospective or Retrospective ACO Attribution Matters for Seriously Ill Patients. 2020;26(12):534-540. doi:10.37765/ajmc.2020.88541

134 Moore Foundation. Payment Models for Advancing Serious Illness Care. 2016. Accessed March 5, 2024. https://workforcesummit.ucsf.edu/sites/g/files/tkssra1166/f/Discern%20Serious-Illness-Care-Payment-Models-White-Paper-2016-09-27%20%281%29.pdf

135 Tynan A, Draper DA. Getting what we pay for: Innovations lacking in provider payment reform for chronic disease care. Center for Studying Health System Change. 2008;6.

136 How to Navigate Health Insurance When Living with a Chronic Health Condition. Healthline. https://www.healthline.com/health/navigating-insurance-when-living-with-a-chronic-health-condition. Updated June 1, 2023. Accessed March 5, 2024.

137 U.S. Department of Health and Human Services. Health insurance plan & network types: HMOs, PPOs, and more. Accessed April 30, 2024. https://www.healthcare.gov/choose-a-plan/plan-types/

138 Moore Foundation. Payment Models for Advancing Serious Illness Care. 2016. Accessed March 5, 2024. https://workforcesummit.ucsf.edu/sites/g/files/tkssra1166/f/Discern%20Serious-Illness-Care-Payment-Models-White-Paper-2016-09-27%20%281%29.pdf

139 Centers for Medicare & Medicaid Services. Primary Care First: Payment and Attribution Methodologies. https://www.cms.gov/priorities/innovation/media/document/payment-and-attribution-methodologies-py20

140 Centers for Medicare & Medicaid Services. GUIDE Model Frequently Asked Questions. Accessed April 17, 2024. https://www.cms.gov/priorities/innovation/guide/faqs

[141] Centers for Medicare & Medicaid Services. ACO Realizing Equity, Access, and Community Health (REACH) Model: PY2024 Financial Operating Guide: Overview. Accessed April 17, 2024. https://www.cms.gov/files/document/aco-reach-py24-financial-operating-guide.pdf

[142] Centers for Medicare & Medicaid Services. Medicare Shared Savings Programs: Shared Savings and Losses, Assignment and Quality Performance Standard Methodology: Specifications. Accessed April 30, 2024. https://www.cms.gov/files/document/medicare-shared-savings-program-shared-savings-and-losses-and-assignment-methodology-specifications.pdf-2

[143] Centers for Medicare & Medicaid Services. Next Generation ACO Model: Calculation of the Performance Year Benchmark: Performance Year 2021. Accessed April 30, 2024. https://www.cms.gov/priorities/innovation/media/document/ngaco-py6-bnechmark-meth

[144] Centers for Medicare & Medicaid Services. ACO Realizing Equity, Access, and Community Health (REACH) and Kidney Care Choices Models: PY2023 Risk Adjustment. https://www.cms.gov/priorities/innovation/media/document/aco-reach-py2023-risk-adjustment

[145] Centers for Medicare & Medicaid Services. Evaluation of the CMS-HCC Risk Adjustment Model, Final Report; 2011. https://www.cms.gov/medicare/health-plans/medicareadvtgspecratestats/downloads/evaluation_risk_adj_model_2011.pdf

[146] Centers for Medicare & Medicaid Services. ACO Realizing Equity, Access, and Community Health (REACH) and Kidney Care Choices Models: PY2023 Risk Adjustment. https://www.cms.gov/priorities/innovation/media/document/aco-reach-py2023-risk-adjustment

[147] National Quality Forum. Multiple Chronic Conditions Measurement Framework; 2012. https://www.qualityforum.org/Publications/2012/05/MCC_Measurement_Framework_Final_Report_document.aspx

[148] National Quality Forum. Multiple Chronic Conditions Measurement Framework; 2012. https://www.qualityforum.org/Publications/2012/05/MCC_Measurement_Framework_Final_Report_document.aspx

[149] Giovannetti ER, Dy S, Leff B, et al. Performance Measurement for People With Multiple Chronic Conditions: Conceptual Model. *Am J Manag Care*. 2013;19(10):e359-e366.

[150] Centers for Medicare & Medicaid Services. Assessing Equity to Drive Health Care Improvements: Learnings from the CMS Innovation Center. https://www.cms.gov/priorities/innovation/data-and-reports/2023/assessing-equity-hc-improv-wp

[151] U.S. Department of Human Services O of IG. Management Challenge 2: Transitioning to Value-Based Payments for Health Care. Accessed February 27, 2024. https://oig.hhs.gov/reports-and-publications/top-challenges/2013/challenge02.asp

[152] Trombley MJ, McClellan SR, Kahvecioglu DC, et al. Association of Medicare's Bundled Payments for Care Improvement initiative with patient-reported outcomes. *Health Serv Res*. 2019;54(4):793-804. doi:10.1111/1475-6773.13159

[153] Nevola A, Morris ME, Colla C, Tilford JM. Risk-based contracting for high-need Medicaid beneficiaries: The Arkansas PASSE program. *Health Policy Open*. 2020;2:100023. doi:10.1016/j.hpopen.2020.100023

[154] Centers for Medicare & Medicaid Services. AHEAD Model Frequently Asked Questions. Accessed February 27, 2024. https://www.cms.gov/priorities/innovation/ahead/faqs

[155] Centers for Medicare & Medicaid Services. Accountable Care Organization (ACO) Realizing Equity, Access, and Community Health (REACH) Model. Accessed February 27, 2024. https://www.cms.gov/newsroom/fact-sheets/accountable-care-organization-aco-realizing-equity-access-and-community-health-reach-model

[156] Sandhu AT, Heidenreich PA, Borden W, et al. Value-Based Payment for Clinicians Treating Cardiovascular Disease: A Policy Statement From the American Heart Association. Circulation. 2023;148(6):543-563. doi:10.1161/CIR.0000000000001143

[157] Duseja R, Andress J, Sandhu AT, et al. Development of Episode-Based Cost Measures for the US Medicare Merit-based Incentive Payment System. *JAMA Health Forum*. 2021;2(5):e210451. doi:10.1001/jamahealthforum.2021.0451

[158] Centers for Medicare and Medicaid Services Measures Inventory Tool. Accessed February 27, 2024. https://cmit.cms.gov/cmit/#/FamilyView?familyId=668

[159] Centers for Medicare & Medicaid Services. Quality: Traditional MIPS Requirements. Accessed May 3, 2024. https://qpp.cms.gov/mips/quality-requirements?py=2024

[160] Centers for Medicare & Medicaid Services. ACO Realizing Equity, Access, and Community Health (REACH) Model - PY2024 Quality Measurement Methodology. 2024. https://www.cms.gov/files/document/aco-reach-quality-msr-meth-py24.pdf

[161] Centers for Medicare & Medicaid Services. Program Guidance & Specifications. Accessed May 3, 2024. https://www.cms.gov/medicare/payment/fee-for-service-providers/shared-savings-program-ssp-acos/guidance-regulations

[162] Centers for Medicare and Medicaid Services Measures Inventory Tool. Accessed February 27, 2024. https://cmit.cms.gov/cmit/#/MeasureInventory

[163] Centers for Medicare & Medicaid Services. Innovation Center Strategy Refresh. 2021. https://www.cms.gov/priorities/innovation/strategic-direction-whitepaper

[164] Centers for Medicare & Medicaid Services. The CMS Innovation Center's Approach to Person-Centered Care: Engaging with Beneficiaries, Measuring What Matters. https://www.cms.gov/priorities/innovation/media/document/cmmi-strategy-pcc-webinar-slides

[165] Health Care Payment Learning & Action Network D. Alternative Payment Model (APM) Framework. 2017. Accessed April 30, 2024. https://hcp-lan.org/workproducts/apm-refresh-whitepaper-final.pdf

[166] Health Care Payment Learning & Action Network D. Alternative Payment Model (APM) Framework. 2017. Accessed April 30, 2024. https://hcp-lan.org/workproducts/apm-refresh-whitepaper-final.pdf

[167] Tynan A, Draper DA. Getting what we pay for: Innovations lacking in provider payment reform for chronic disease care. *Center for Studying Health System Change.* 2008;6.

[168] Tynan A, Draper DA. Getting what we pay for: Innovations lacking in provider payment reform for chronic disease care. *Center for Studying Health System Change.* 2008;6.

[169] Center for Healthcare Quality & Payment Reform. An Alternative Payment Model for CHRONIC CONDITIONS. Accessed March 5, 2024. https://chqpr.org/downloads/ChronicCondition_APM.pdf

[170] Tynan A, Draper DA. Getting what we pay for: Innovations lacking in provider payment reform for chronic disease care. *Center for Studying Health System Change.* 2008;6.

[171] Miller HD. Patient-centered payment for care of chronic conditions. *The Journal of Ambulatory Care Management*. 2023;46(2):89-96. doi:10.1097/JAC.0000000000000455

[172] Tynan A, Draper DA. Getting what we pay for: Innovations lacking in provider payment reform for chronic disease care. *Center for Studying Health System Change.* 2008;6.

[173] Health Care Payment Learning & Action Network. *Accelerating and Aligning Population-Based Payment: Patient Attribution*. June 30, 2016. Accessed March 5, 2024. https://hcp-lan.org/pa-whitepaper/

[174] Kelley AS, Covinsky KE, Gorges RJ, McKendrick K, Bollens-Lund E, Morrison RS, Ritchie CS. Identifying Older Adults with Serious Illness: A Critical Step toward Improving the Value of Health Care. *Health Serv Res.* 2017 Feb;52(1):113-131. doi: 10.1111/1475-6773.12479

[175] Centers for Disease Control and Prevention (CDC). National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP). About Chronic Diseases. Accessed April 11, 2024. https://www.cdc.gov/chronicdisease/about/index.htm

[176] National Center for Health Statistics, Centers for Disease Control and Prevention. Summary Health Statistics for the U.S. Population: National Health Interview Survey, 2012. December 2013. http://www.cdc.gov/nchs/data/series/sr_10/sr10_259.pdf

[177] Agency for Healthcare Research and Quality (AHRQ). Topic: Chronic Conditions. Accessed April 11, 2024. https://www.ahrq.gov/topics/chronic-conditions.html

[178] Centers for Medicare & Medicaid Services. CMS Measures Management System (MMS) Hub. Multiple Chronic Conditions Measures. August 2023. https://mmshub.cms.gov/sites/default/files/Multiple-Chronic-Condition-Measures.pdf

[179] National Quality Forum (NQF). Endorsement Summary: Multiple Chronic Conditions Measurement Framework. May 2012. https://www.qualityforum.org/News_And_Resources/Endorsement_Summaries/MCC_Framework_Endorsement_Summary.aspx

[180] U.S. Department of Veterans Affairs (VA). VA Health Systems Research. Care of Complex Chronic Conditions. Accessed April 11, 2024. https://www.hsrd.research.va.gov/research/portfolio_description.cfm?Sulu=9

[181] Managing Complexity in Chronic Care. Arlington, VA: Department of Veterans Affairs, Office of Research and Development; 2006. https://www.hsrd.research.va.gov/research/portfolio_description.cfm?Sulu=9

[182] World Health Organization. Noncommunicable Diseases Overview. Accessed April 25, 2024. https://www.who.int/westernpacific/health-topics/noncommunicable-diseases#tab=tab_1

[183] Robert Wood Johnson Foundation. Chronic Conditions: Making the Case for Ongoing Care. February 2010. https://folio.iupui.edu/bitstream/handle/10244/807/50968chronic.care.chartbook.pdf?sequence=1

[184] J. Flowers Health Institute. What is a Complex Medical Condition? An Informative Guide. 2024. https://jflowershealth.com/what-is-a-complex-medical-condition/

[185] Multiple Chronic Conditions Resource Center. Multiple Chronic Conditions. Accessed April 25, 2024. https://multiplechronicconditions.org/

[186] Feudtner C, Feinstein JA, Zhong W, Hall M, Dai D. Pediatric complex chronic conditions classification system version 2: updated for ICD-10 and complex medical technology dependence and transplantation. *BMC Pediatr*. 2014 Aug 8;14:199. doi: 10.1186/1471-2431-14-199

[187] Sevick MA, Trauth JM, Ling BS, Anderson RT, Piatt GA, Kilbourne AM, et al. Patients with Complex Chronic Diseases: Perspectives on Supporting Self-Management. *J Gen Intern Med*. 2007;22(Suppl):438-444. doi:10.1007/s11606-007-0316-z

[188] National Cancer Institute. National Institutes of Health. Chronic Disease. Accessed April 25, 2024. https://www.cancer.gov/publications/dictionaries/cancer-terms/def/chronic-disease

[189] American Medical Association. Chronic Diseases. Accessed April 25, 2024. https://www.ama-assn.org/topics/chronic-diseases

[190] Australian Institute of Health and Welfare. Chronic Disease. 2023. https://www.aihw.gov.au/reports-data/health-conditions-disability-deaths/chronic-disease/overview; https://msmedical.com.au/chronic-disease-management/#:~:text=The%20Department%20of%20Health%20defines%20a%20Chronic%20Disease%20as&text=Features%20common%20to%20most%20chronic,leading%20to%20other%20health%20complications

[191] Kelley AS, Covinsky KE, Gorges RJ, McKendrick K, Bollens-Lund E, Morrison RS, Ritchie CS. Identifying Older Adults with Serious Illness: A Critical Step toward Improving the Value of Health Care. *Health Serv Res.* 2017 Feb;52(1):113-131. doi: 10.1111/1475-6773.12479

[192] Centers for Medicare & Medicaid Services. Medicare Benefit Policy Manual. Chapter 9 – Coverage of Hospice Services Under Hospital Insurance. February 2024. https://www.cms.gov/regulations-and-guidance/guidance/manuals/downloads/bp102c09.pdf

[193] Centers for Medicare & Medicaid Services. Center for Medicare and Medicaid Innovation. Primary Care First. Seriously Ill Population (SIP) Payment Model Option. Accessed April 25, 2024. https://www.cms.gov/priorities/innovation/files/slides/pcf-sip-slides.pdf

[194] The Commonwealth Fund. Health Care in America. The Experience of People with Serious Illness. October 2018. https://www.commonwealthfund.org/sites/default/files/2018-10/Schneider_HealthCareinAmerica.pdf

[195] Hui D, Nooruddin Z, Didwaniya N, Dev R, De La Cruz M, Kim SH, et al. Concepts and Definitions for "Actively Dying," "End of Life," "Terminally Ill," "Terminal Care," and "Transition of Care": A Systematic Review. *J Pain Symptom Manage* 2014;47(1):77-89. doi:10.1016/j.jpainsymman.2013.02.021

[196] Sincera. What is Serious Illness. Accessed April 25, 2024. https://www.sinceracare.org/is-sincera-right-for-you/what-is-serious-illness/

[197] Office of Human Resources Management. FMLA – Serious Health Condition. Accessed April 25, 2024. https://www.commerce.gov/hr/employees/leave/fmla/serious-health-condition#:~:text=Helpful%20Not%20helpful-,FMLA%20%2D%20Serious%a20Health%20Condition,connection%20with%20the%20overnight%20care

[198] Law Insider. Serious Illness Definition. Accessed April 25, 2024. https://www.lawinsider.com/dictionary/serious-illness