

Innovative Care Models for High-Cost Medicare Beneficiaries: Delivery System and Payment Reform to Accelerate Adoption

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About a third of Medicare beneficiaries are now covered by Medicare Advantage (MA) plans or accountable care organizations (ACOs).¹ These organizations have an incentive to adopt innovations in care delivery that yield better care, improve patient outcomes, and lower costs. MA plans are at financial risk for the total cost of Medicare services, and Medicare ACOs are either at full or partial risk, or eligible for shared savings. Delivering care in a way that reduces the costly use of inpatient hospital care and emergency departments (EDs) helps these organizations to realize savings and gain market share.

Factors that place Medicare beneficiaries at risk for higher acute, post acute, and long-term care utilization and expenditures include age, number and type of chronic conditions, functional impairment, income level, and social support system (eg, living alone). Those Medicare beneficiaries with multiple chronic conditions, functional impairment, and low income, and/or who are living alone or in institutions, account for most Medicare expenditures and high rates of ED visits, hospitalizations, readmissions, and nursing home placements.² These high-risk beneficiaries also tend to spend the most—5% of Medicare's beneficiaries account for more than 40% of the costs.^{3,4}

Despite the potential for savings, adoption of innovative care delivery models focused on the highest cost, highest risk patients is limited—in part, this reflects the need for large-scale testing of innovations in care delivery, as evidence is limited on what works and why. The Center for Medicare and Medicaid Innovation (CMMI) is starting to fill this gap with \$10 billion in funding to experiment with innovative payment models and improved care delivery systems, as part of the Affordable Care Act.⁵⁻⁷ CMMI has launched a number of initiatives, with the primary focus on ACOs, bundled payments for care improvement, and primary care transformation.^{8,9} These initiatives have helped spur the development of ACOs, health systems, and advanced primary care practices. The first evaluation results for Pioneer ACOs

ABSTRACT

Objectives: About a third of Medicare beneficiaries are covered by Medicare Advantage (MA) plans or accountable care organizations (ACOs). As a result of assuming financial risk for Medicare services and/or being eligible for shared savings, these organizations have an incentive to adopt models of delivering care that contribute to better care, improved health outcomes, and lower cost. This paper identifies innovative care models across the care continuum for high-cost Medicare beneficiaries that MA plans and ACOs could adopt to improve care while potentially achieving savings. It suggests policy changes that would accelerate testing and spread of promising care delivery model innovations.

Study Design and Methods: Targeted review of the literature to identify care delivery models focused on high-cost or high-risk Medicare beneficiaries.

Results: This paper presents select delivery models for high-risk Medicare beneficiaries across the care continuum that show promise of yielding better care at lower cost that could be considered for adoption by MA plans and ACOs. Common to these models are elements of the Wagner Chronic Care Model, including practice redesign to incorporate a team approach to care, the inclusion of nonmedical personnel, efforts to promote patient engagement, supporting provider education on innovations, and information systems allowing feedback of information to providers. The goal of these models is to slow the progression to long-term care, reduce health risks, and minimize adverse health impacts, all while achieving savings. These models attempt to maintain the ability of high-risk individuals to live in the home or a community-based setting, thereby avoiding costly institutional care. Identifying and implementing promising care delivery models will become increasingly important in launching successful population health initiatives.

Conclusions: MA plans and ACOs stand to benefit financially from adopting care delivery models for high-risk Medicare beneficiaries that reduce hospitalization. Spreading these models to other organizations will require provider payment policy changes. Integration of acute and long-term care would further spur adoption of effective strategies for reducing or delaying entry into long-term institutional care.

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Take-Away Points

- This paper presents 9 delivery models for high-risk Medicare beneficiaries in different settings that Medicare Advantage (MA) plans and accountable care organizations (ACOs) could adopt to achieve better care at lower costs.
- Common to these models is a team approach to care, including nonmedical personnel, and providing care in home- or community-based settings to avoid costly institutional care.
- Our review of the literature included intervention models such as Advanced Primary Care, Home-Based Primary Care, CAPABLE, MIND at Home, PACE, Hospital at Home, Hospital Elder Life Program, Transitional Care, and INTERACT. Policy changes to permit MA plans, ACOs, and service providers to share Medicaid long-term care savings would further accelerate adoption.

indicate some modest success in improving care and lowering costs.¹⁰ Better targeting of high-risk beneficiaries and the use of models that manage care across the continuum could yield greater savings. For the high-risk individuals who transition frequently across settings of care, to date less emphasis has been placed on specific tools or care models, which could enhance quality of care and patient experience, as well as to reduce cost (Figure).

The largest obstacle to the diffusion of innovative delivery models that integrate care is a lack of aligned financial incentives and the presence of a fragmented payment system across different providers. MA plans often continue to pay providers on a fee-for-service basis, giving providers little incentive to provide lower-cost, higher-quality care. The closer integration of the insurance and provider functions, however, is starting to align provider incentives. Integrated delivery systems with MA plans or managed care at-risk provider contracts have the incentive to identify methods of providing better care at lower costs. This has spurred peer-to-peer learning and the creation of a Medicare Innovations Collaborative to provide technical assistance to promote the simultaneous adoption of multiple complex-care models.¹¹

Collaborations will continue to grow as Medicare and other payers begin paying for total care for a population over time or over an episode, with accountability for quality and patient health outcomes.¹² Identifying interventions that prevent long-term nursing home admissions could yield significant savings, as non-alignment of incentives across providers, families, and social service agencies has been a barrier to the diffusion of models of care that reduce these admissions. Medicaid is responsible for many long-term care costs, adding more complexity in designing incentive strategies to reduce long-term care admissions.

This paper examines how integrated delivery systems, health systems, and MA plans bearing financial risk could benefit from adopting specific care delivery models across

the care continuum that show promise of better results for high-risk Medicare beneficiaries. It also explores policy changes to create a global payment system, which is more amenable to implementing new care delivery models.

Innovations for High-Risk Medicare Populations

The budgetary pressure to bend the cost curve for Medicare beneficiaries is likely to persist or accelerate as those born after World War II become eligible for benefits. Since the majority of spending is concentrated among a minority of beneficiaries, the importance of appropriately targeting innovation initiatives on high-cost, high-risk subpopulations will increase. The diversity of beneficiaries by health status, functioning, living arrangements, and income suggests that rather than focus on a uniform program with uniform benefits, Medicare might look to adapt benefits and care delivery to the specific needs of Medicare beneficiary sub-groups based on their health risks. As the population ages, with unprecedented growth in the oldest cohort, considering the risks of long-term care as well as acute care grows in importance.

Table 1 describes characteristics of potential high-risk beneficiaries based on the authors' estimates from the Health and Retirement Study for 2010.¹³ Beneficiaries eligible for both Medicare and Medicaid are 4 times more likely to have 6 or more chronic conditions than beneficiaries with incomes 200% or more of the federal poverty level not covered by Medicaid, and they are 3 times more likely to have 2 or more restrictions in activities of daily living. Dual eligibles are more likely to live alone and more likely to be disabled than higher-income Medicare beneficiaries with incomes 200% or more of the federal poverty level. Those Medicare beneficiaries with incomes below 200% of the poverty level who are not covered by Medicaid are also more at risk than higher-income beneficiaries, with a greater likelihood of having multiple chronic conditions and functional impairments, as well as to be living alone.

To illustrate how strategies that target high-risk groups that are designed to achieve savings could work, we offer promising care delivery innovations as examples here. Interventions showing modest success have generally tried to improve coordination among the patient, family members, providers, and even social service agencies. All of the select innovations incorporate the major elements of the Wagner Chronic Care Model, including practice

■ **Figure.** Continuum of Care



■ **Table 1.** Characteristics of Potential High-Risk Medicare Beneficiaries

	Dual Eligible Beneficiaries With Both Medicare and Medicaid	Beneficiaries With Incomes <200% FPL	Beneficiaries With Incomes ≥200% FPL	Total
Total, N (in millions)	5.9	10.6	26.0	42.5
%	13.8	24.9	61.2	100.0
By numbers of chronic conditions (%)				
0	4.7	4.1	6.7	5.7
1	12.4	15.2	18.7	17.0
2	23.1	24.5	28.1	26.6
3	21.9	27.4	24.0	24.7
4	18.6	16.6	13.5	15.0
5	11.2	8.1	6.5	7.5
6+	8.1	4.2	2.5	3.5
By functional impairments (%)				
0 ADL	57.2	73.7	83.4	78.2
1 ADL	15.6	12.1	8.6	10.1
2+ ADL	27.2	14.1	7.9	11.6
By living arrangement (%)				
Beneficiaries living alone	40.4	50.6	22.9	32.3
Living with family member or other	58.8	49.3	77.0	67.7
By age and disability eligibility (%)				
50-64 years	27.6	11.6	5.8	8.3
65-74 years	34.4	38.1	55.8	50.9
75-84 years	26.8	33.5	29.0	28.8
85+ years	11.1	16.8	9.4	12.0

ADL indicates activities of daily living; FPL, federal poverty level. Authors' estimates based on the 2010 Health and Retirement Survey, RAND file. Conditions and difficulties with ADL are self-reported and may not match claims data estimates.

redesign, patient engagement, provider support and education, and information systems designed to furnish feedback of information to providers.¹⁴ The Wagner Chronic Care Model is applicable to this high-risk Medicare population because most members have chronic conditions in addition to functional limitations. The model stresses the need for patients to be actively involved in their care, as well as practice redesign, ongoing provider education, and meaningful use of information systems. Successful models that are able to demonstrate savings will likely have some aspects of all 4 elements.

All patients benefit from better care from providers, but high-risk patients have the added challenge of moving across multiple care settings, from primary care to possibly the hospital and nursing home.¹⁵ For the high-risk elderly, the care continuum starts with normal functioning in the home, with interventions needed in the primary care setting to maintain function. As the course of disease and aging continues, the elderly may need more support to stave off transitioning to nursing homes, in addition to coordinating care across multiple providers. For all elderly, reducing the number and severity of hospitaliza-

■ **Table 2.** Summary of Care Delivery and Payment Innovations

Short Title	Care Continuum Setting	Targeted Population	Locations Tested	Delivery Model	Results
1. Advanced Primary Care ¹⁶	Primary care practice	26,303 elderly at high risk of hospitalization across 43 practices	Geisinger Health System, Pennsylvania	Increased resources for primary care clinics, Geisinger Health Plan-funded case managers	18% reduction in yearly hospital admissions, 36% drop in yearly readmissions
2. Home-Based Primary Care (HBPC) ¹⁷	Home	1966 elderly who had difficulty with 2 or more ADLs, or a terminal illness, COPD, or CHF	16 Veterans Administration Medical Centers	Care manager, round-the-clock access, streamlined hospital admission and discharge procedures	22% decrease in hospital admissions for severely disabled patients. No changes in functional status, but caregiver satisfaction improved significantly. Mean costs for HBPC group were 12% higher at 12 months' follow-up
3. CAPABLE ¹⁸	Home	40 low-income elderly with at least 1 ADL or 2 IADLs	Baltimore	Hired nurse and occupational services; participants also received \$1300 in handyman home repairs and modifications	94% of intervention group participants thought the program made life easier for them. 67% decrease in average ADL problems
4. MIND at Home ¹⁹	Home	303 elderly with memory disorders living at home	Baltimore	Nonclinical community workers, nurse, and physician provide in-home needs assessments, individualized care planning, service/resource referrals, education, and skill-building for patient and caregivers	Intervention delayed time to leaving home by 9 months over 2 years of follow-up (median) and the adjusted hazard of leaving home was decreased by 37%. Reduced safety and legal/advanced directive unmet needs. Improved patient quality of life
5. Hospital at Home ²⁰	Home	455 elderly requiring admission for pneumonia, CHF, COPD, or cellulitis	3 managed care settings, 2 Veterans Administration Medical Centers in sites around the country	Services included basic diagnostics, intensive nursing services, visits from physician	Hospital at Home eliminated or shortened hospital stays, with lower lengths of stay (by 1.5 days) and about half the specialized procedures that hospitalized patients did. Costs in the intervention group were \$2398 (95% CI, \$1376-\$3631) lower.
6. PACE ²¹	Community-based	2040 nursing-home-eligible patients	5-year results from South Carolina; program now exists in 31 states	Community-based comprehensive services including acute and long-term care and pharmacy benefits. Capitated fee paid to the PACE providers	Median survival was 3 years for the PACE participants compared with 1.4 years for the nursing home residents, though the study did not control for the selection bias between nursing home residents and PACE participants
7. Delirium Prevention (HELP) ²²	Acute care	Elderly hospital patients	A teaching hospital	Cosmetic changes to hospital floor such as larger clocks or schedules listed on boards in patient rooms; increased coordination among staff; cognitive and physical therapy exercises for patients	40% lower odds of developing delirium in intervention group; 56 fewer days of delirium in the intervention group
8. Transitional Care ²³	Post acute care	750 randomized elderly patients admitted to hospital	Integrated delivery system in Colorado	Increased care coordination and education provided to participants and family, paid for by health plan	Lower readmission rates in intervention group at 30 and 90 days—16.7% at 30 days and 22.5%; <i>P</i> = .04 at 90 days. Significantly lower costs at 180 days (\$2058 vs \$2546; <i>P</i> = .049)
9. INTERACT ²⁴	Long-term care	25 nursing homes	Florida, Massachusetts, and New York	Education, bi-weekly teleconferences, and other diagnostic tools for nursing home staff paid for by study team	17% reductions in self-reported hospital admissions from same time in previous year. Projected savings to Medicare were \$125,000 per year

ADL indicates activities of daily living; CHF, congestive heart failure; COPD, chronic obstructive pulmonary disorder; IADL, instrumental activities of daily living.

Table 3. Assessment of Barriers (X) and Incentives (O) for Spread of Innovative Delivery Models

	Savings to Medicare (O) or Non-Medicare (X) Payers	Requires Supportive Infrastructure	Requires Physical Infrastructure Investment	Coverage and Coordination of Non-Healthcare Services/Personnel	Targeting of Populations; Screening Cost
Advanced Primary Care	OO	XXXX	X	X	OO
Home-Based Primary Care	OO		X	XXXX	X
CAPABLE	XX		O	XXXXX	X
MIND	XXXXX		X	XXXXX	XXXXX
Hospital at Home	OOOOO		X	XX	XXXXX
PACE	XX		XXXXX	XXX	XXX
HELP	OO		XX		O
Transitional Care	OOOOO	XXX	X	X	OOO
INTERACT	OOOOO		XXXXX		OOO
Potential solutions to overcome challenges	Global payment/shared savings	Requirements imposed on eligible organizations	Upfront capital	Requirements imposed on organizations and training of personnel	Requirements imposed on eligible beneficiaries

More X's indicate a greater challenge or barrier; more O's, greater alignment.

tions is crucial, and some interventions target this particular care setting. Lastly, high-risk elderly in nursing homes have their own set of needs to minimize transitions in and out of acute care settings.

The illustrative care delivery model innovations examined here were selected because: 1) they have some evidence of improved care, better patient care experiences, and outcomes with lower cost; 2) they incorporate elements of the Wagner model; and 3) they encompass the full continuum of care (eg, primary care, home or community care, inpatient hospital care, transitional care from inpatient to post acute care, and long-term care). **Table 2** provides a brief description of each model, its target population, and promising results from at least 1 evaluative study. The models selected point to the policy changes that would be required to create incentives for adoption. The **eAppendix** (available at www.ajmc.com) describes the models in more detail and highlights particular barriers to wider implementation.

Barriers to Spreading Innovations for High-Risk Elderly

Table 3 summarizes major obstacles to the diffusion of innovative models of care for high-risk older adults. These include the fact that savings associated with the delivery of more efficient care may accrue to Medicaid, families, or providers/parties other than those incurring the cost of the innovation, thereby diluting the return to the Medicare program and adopting organizations. To realize a return, eligible beneficiaries or organizations providing

services may need to meet specific requirements to ensure likelihood of yielding the anticipated savings or outcomes. This might entail screening costs or administrative burdens on Medicare and participants, and may increase the risk of fraud or system gaming. Finally, upfront assistance with capital costs or the costs of training qualified personnel, or reinsurance against high-cost cases, may be required.

Barriers to adoption are particularly onerous in the long-term care setting. Incentives are not aligned across acute and long-term care sectors. Hospitals that reduce institutional care—for example, through reduction of delirium in at-risk hospitalization patients—incur added staffing costs, yet do not benefit from Medicaid long-term care savings that may result. Nursing homes do not benefit from initiatives that reduce hospitalization and, in fact, typically lose Medicare revenues for post acute care when residents are not hospitalized for acute illnesses. Further, the added costs of nursing home staffing to prevent or manage conditions typically requiring hospitalization are not compensated.

Payment approaches that stimulate integration of care across acute and long-term care services through sharing savings need further policy development. This is a particularly important issue for the dual eligible population. While not all at-risk Medicare beneficiaries are covered by Medicaid, lower-income Medicare beneficiaries with functional limitations are likely to eventually exhaust their financial resources and qualify for Medicaid. Interventions that reduce the need for long-term institutional

Table 4. Potential Savings Across the Care Continuum and Payment Policy Needed to Align Incentives

Care Continuum	Primary Care Practice		Home		Community-Based	Acute Care	Post Acute Care	Long-Term Care	
Care innovation	Advanced Primary Care	Independence at Home	CAPABLE	MIND	Hospital at Home	PACE	HELP	Transitional Care	INTERACT
Target population	Chronically ill but ambulatory	Chronically ill, largely homebound	Some ADL limitations	Dementia patients and their caregivers	Acutely ill, homebound	ADL limitations but mobile	Acutely ill, some cognitive impairments	Discharged hospital patients	Severe ADL or cognitive impairments
Organization providing services	Primary care practice	Primary care practice	Social service organization	Social service organization	Hospital or health system	Senior day program	Hospital	Post acute care organization	Nursing home
Services not covered	Nurse care managers	Nurse care managers	Care managers, handyman services	Care managers, social workers	Home visits of hospital staff and nurse care manager	Daytime activities	Capital costs and staff training	Staff training	Staff training
Potential for savings	Reduced hospitalizations/ED visits	Reduced hospitalizations/ED visits	Reduced nursing home stays	Reduced nursing home stays	Reduced hospitalizations	Reduced nursing home stays	Reduced nursing home stays	Reduced readmissions	Reduced hospitalizations

Payment policy needed for organization providing services

Fee-for-service	Care management fee and shared savings	Care management fee and shared savings	Care management fee; shared Medicare-Medicaid savings	Care management fees; shared Medicare-Medicaid savings	Partial payment based on Diagnosis Related Group for in-home care	Capitated Medicare-Medicaid payment; reinsurance	Medicare-Medicaid shared savings for hospitals	Transitional care fees; shared savings; bundled payments for hospitals	Medicare-Medicaid shared savings for nursing homes
MA/ACO	Global payments for acute care	Global payments for acute care	Global payments for acute and long-term care	Global payments for acute and long-term care	Global payments for acute care	Capitated Medicare-Medicaid payment; reinsurance	Medicare-Medicaid shared savings for hospitals	Global payments for acute care	Extension of MA/ACO to long-term care
Medicaid managed care for dual eligibles	Global payments for acute care	Global payments for acute care	Global payments for acute and long-term care	Global payments for acute and long-term care	Global payments for acute and long-term care	Capitated Medicare-Medicaid payment; reinsurance	Medicare-Medicaid shared savings for hospitals	Global payment for acute to long-term care transition	Medicare-Medicaid shared savings for nursing homes

ACO indicates accountable care organization; ADL, activities of daily living; DRG, diagnosis related group ED, emergency department; MA, Medicare Advantage.

care would not only benefit beneficiaries and their families, but ultimately lower Medicaid costs.

New Payment Models Key to Success

A key determinant of success will be designing payment models that show promise of achieving better outcomes and lower acute and long-term care costs. This could be the evolution of ACOs and MA plans to take financial risk for long-term care costs as well as Medicare services, or more modest steps such as Medicaid and/or

Medicare payment of care management fees for services in the home and shared long-term care savings.

These examples of innovative delivery models have important implications for how Medicare and Medicaid payment models would need to change to capitalize on these promising innovations on a large scale. In all models, MA plans, integrated delivery systems, and ACOs are the most likely to benefit from shared savings initiatives due to aligned financial incentives that would accrue with reduced use of expensive Medicare services. However,

even these organizations do not benefit from reduced Medicaid long-term care costs.

Table 4 summarizes the target populations and the services not currently covered by Medicare that are crucial to the delivery model innovations. In most cases, the non-covered services that are key to the delivery models are those provided by social workers or nurse case managers. Table 4 also highlights the source of total health and long-term care savings, which for high-risk beneficiaries mostly accrue from reduced hospitalizations and readmissions, as well as from reduced nursing home admissions. Additionally, Table 4 distills the payment changes needed to further align incentives and encourage adoption and spread of the delivery models, for fee-for-service providers, MA plans and provider organizations at financial risk for cost of care or sharing in savings, and Medicaid managed care plans.

The most obvious source of savings for MA plans and ACOs come from better management of high-risk beneficiaries in their homes or in nursing homes to avoid ED use and hospitalization. Models such as Hospital at Home and INTERACT should be especially attractive to MA plans and ACOs, as they effectively reduce costly hospitalization of Medicare patients. However, mounting these interventions in patients' homes or in nursing homes requires upfront costs—in particular, the cost of providing services in patients' homes, or training and supervising nurse aides in nursing homes, are not now typically incurred by MA plans and ACOs. Testing and refining effective models of care on a smaller scale and closely monitoring their impact may be needed to overcome this obstacle to implementation.

Conclusions

Innovative care delivery models for Medicare beneficiaries with physical and cognitive functional limitations show substantial promise of improving quality of life for these beneficiaries and their caregivers, as well as for reducing costs—especially costly long-term nursing home placements. MA plans and ACOs looking for care delivery innovations that could reduce cost of hospitalization could especially benefit from implementing the Advanced Primary Care, Independence at Home, Home-based Primary Care, Hospital at Home, Transitional Care, and INTERACT models of care delivery—all of which have potential to reduce hospitalization or readmissions. Other models such as CAPABLE, MIND at Home, PACE, show promise of helping at-risk Medicare beneficiaries continue to live independently at home by reducing or delaying nursing home placement; this has the potential to yield Medicaid savings. Medicaid managed care plans or those

financially responsible for dual eligibles could well benefit from their adoption.

However, for most health plans and healthcare organizations, changes in Medicare policy will be required to permit shared savings for nursing home care and/or to cover the additional cost of nurse or social worker care management and other services such as providing training and support to family caregivers and handyman services that support independent living. Care management fees to cover these costs for a targeted group of high-risk beneficiaries who can most benefit from these interventions should be the focus of intensive demonstrations by the Center for Medicare and Medicaid Innovation. If successful, coverage of these care management fees and shared savings for organizations implementing these innovative care models would accelerate adoption and spread.

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eAppendix. Innovation Models Across the Care Continuum

Care Setting: Primary Care Practices

The first part of the care continuum is for those elderly at high risk for hospitalization, but who have high activities of daily living functioning and can easily get to a physician's office.

Example Innovation: Advanced Primary Care

Advanced Primary Care is a team-based model of primary care practice that combines healthcare services with other professionals such as nurse care managers, social workers or pharmacists.¹ There are many different models of Advanced Primary Care but all share the philosophy of providing patient-centered, coordinated, comprehensive care. Case management for these patients is key to reducing preventable hospitalization and readmissions and lowering costs. The typical model involves embedding a specially trained registered nurse in a primary care practice. Some initial evaluations have shown promising results.^{2,3} Cost savings for this model have been shown in the Geisinger Health System's Proven Health Navigator (see **Table 2**).⁴

Although this model holds promise, it may work best within integrated delivery systems, both because the financial incentives are better aligned and because the larger organization can provide supportive infrastructure.⁵ For example, Geisinger's electronic medical record system has built-in support tools, tele-monitoring, specialist referrals, and an internal payment incentive system that rewards providers and staff for meeting performance metrics.⁶ Geisinger's Medicare Advantage plan and its participation in the CMMI Transition Accountable Care Organization (ACO) initiative permit it to benefit financially from savings.

Important to note, though there are several examples which attempt to evaluate the efficacy and cost-effectiveness of this model, few have done so in a comprehensive fashion which would best highlight the potential of this model. The 3 main barriers to the proper understanding of the advanced primary care model are: 1) lack of funding to implement on a large-enough scale and sample size to more accurately demonstrate impact. 2) Too short of a timeline in the evaluation of various implementations of the advanced primary care model. For example, given the type of investments required to transition to an advanced primary care model, it is reasonable to not expect to see financial savings until more than a few years after transitioning. Also, given the nature of the management of chronic diseases, improved patient outcomes based on changes in the care model can take extended periods of time to manifest themselves. 3) According to a systematic review on evaluations of the advanced primary care model, only 40% of advanced primary care model pilots, currently underway have what would be characterized as “well-developed evaluation plans.” In order to get a better sense of what this model has to offer, more must be done by the relevant stakeholders to ensure that the data being generated to evaluate these models is of the highest quality and just as importantly standardized across the board.²

Care Setting: Home

The next stage of the care continuum is for those who can still live at home but need additional support in order to maintain this independence. These types of interventions target older Americans at high-risk for hospitalization or institutionalization.

Example Innovation: Home-Based Primary Care

The Veteran's Administration (VA) has been at the forefront of innovations in home-based primary care (HBPC).^{7,8} The VA HBPC program uses care managers working with primary care physicians to monitor homebound patients who are too sick to go into the physician's office for appointments because of illness or functional impairments on a 24-hour as-needed basis. The program also streamlines hospital and discharge procedures for participants. A randomized controlled trial found significantly increased HBPC satisfaction among non-terminal patients at 12 months but higher costs of care.⁹

The VA acts as a single payer system with governmentally-determined total budgets for comprehensive services including long-term care, so investing in strategies such as the HBPC can pay off through reduced hospitalizations or long-term care admissions. Similarly, Medicare Advantage plans, capitated integrated systems, and ACOs receiving shared savings can potentially benefit from implementing such a care model.

Outside of the VA, hundreds of home-based primary care practices around the United States provide care mostly in the context of fee-for-service Medicare; some practices contract with Medicare Advantage plans to care for high-cost, high-risk patients. The Independence at Home Demonstration (section 3024 of the Affordable Care Act), is examining the effects of such care on quality and costs using a shared savings mechanism.¹⁰

Example Innovation: CAPABLE

The Community Aging in Place, Advancing Better Living for Elders (CAPABLE) model seeks to improve function by combining an interdisciplinary team consisting of a nurse, occupational therapist, and a handyman to help low-income elders living at home achieve their

individually-set goals, such as the ability to navigate stairs or prepare meals.¹¹ Participants receive 6 occupational therapy visits, 4 registered nurse visits, and \$1300 in handyman repairs and modifications. Specific services provided depend on each participant's own goals for daily living and functioning. A nurse manages depression, pain symptoms, medications, coaching on communication with primary care providers, and an occupational therapist addresses strength/balance training. A handyman provides basic repairs such as adding handrails to allow participants to go up and down the stairs also based on the participants' functional goals. The program was piloted among 40 low-income elderly residents in Baltimore with trouble with at least 1 activity of daily living or 2 instrumental activities of daily living. The number of ADLs participants had trouble with dropped by more than half, from 2.1 to 0.7 on average in the intervention group after 6 months.

The barrier to spread for this intervention is the lack of integration of acute and long-term care financing. The model requires services of personnel such as handyman services that are not traditionally funded as part of health insurance or delivered or coordinated with healthcare services. Even ACOs and Medicare Advantage plans do not benefit financially from reduced nursing home placement. If the intervention is able to reduce the use of nursing homes and allow individuals to stay at home, then it may be cost-effective to pay for the handyman services under Medicaid. CAPABLE has acquired an innovation grant from CMMI and an NIH-funded randomized control trial to try the program in a larger sample with promising early results.

Example Innovation: MIND at Home

Beneficiaries with Alzheimer's & dementia (AD) cost Medicaid 19 times more than those without AD and Medicare 3 times more.¹² Early nursing home placements are a major cost

driver.^{13,14} MIND at Home is a community-based care coordination intervention that targets persons with dementia and other memory disorders, a particularly high-risk, high-cost group. MIND at Home pairs community workers (non-clinical) with a supervising psychiatric nurse and a geriatric psychiatrist. In-home visits allow for assessment of patient and caregiver needs followed by the development of a personalized and adaptable care plan. Attention is given to a wide range of needs including medication management (eg, polypharmacy and adherence), medical complications (eg, urinary tract infections), household and personal safety (eg, home fall risks, wander risk), behavior management, driving safety, daily activity schedule, and legal issues. Based on needs, patients and caregivers are referred and linked to appropriate services and resources. Caregivers are also provided dementia care education, management skills training, and informal counseling and coping strategies by the interdisciplinary team.

In a randomized controlled trial, participants receiving MIND were less likely to transition from home to other care settings or die (30% versus 46%) at 18 months compared with control participants, and the adjusted hazard of leaving the home decreased 37%. Also, they had fewer unmet care needs in areas of safety and legal/advance care issues, and had improved quality of life compared to controls. Over a median follow-up period of about 2 years, those who got 18 months of MIND were able to safely stay in their homes about 9.5 months (a median of 288 extra days) longer than control.¹⁵

Barriers to implementing MIND at Home include identifying funding sources for the non-clinical community worker staff and the supervision time for the nurse and physician. While Medicaid will pay for the long-term care facility costs once low-income individuals enter them, it would not typically pay for home, phone, or telemedicine visits by this type of team. Changes

to Medicaid payment policies or new types of Medicaid managed care contracts for ACOs and Medicare Advantage plans may be needed to spur wider adoption.

Example Innovation: Hospital at Home

The Hospital at Home program provides hospital services to emergency department visitors, within the patient's home in order to keep them from being admitted. The program targets patients presenting at the emergency department or ambulatory clinic with pneumonia, exacerbations of chronic heart failure, chronic obstructive pulmonary disease or cellulitis who are (if they agree to participate), then transported home via ambulance and provided in-home nursing services. Basic services such as blood tests, oxygen and other respiratory therapies, electrocardiography, radiography, or the provision of intravenous medications or fluids are provided in the home. When stabilized, patients are discharged to the care of their primary care physician. In the US, the first evaluation of this model found that the intervention group had significantly lower mean (intervention 3.2 days vs 4.9 comparison group) and median (2.0 intervention vs 3.0 comparison group) lengths of stay as well as cost for the index hospitalization was \$2398 less in the intervention group (CI, \$1376 to \$3631).¹⁶ A recent meta-analysis of 61 randomized controlled trials of the model, found substantial reductions in mortality, readmissions, and cost for patients treated at home, compared to the hospital.¹⁷

In the initial study in the United States, Medicare Advantage Plans and Veteran's Administration clinics participated. These organizations have integrated payer systems that allow savings to accrue to recoup any investments in extra resources. The main barrier to spread for this intervention is the lack of a payment mechanism for it in the fee-for-service Medicare system. For example, if a hospital were to provide the Hospital at Home program, they would be

paying for additional resource use while losing the payment from the admission of the same patient to the hospital. Potentially, ACOs with shared savings or global payment per beneficiary may have the appropriate incentive alignment to implement this program.

Care Setting: Community-Based

Community-based models target seniors who want to remain living at home, but who need assistance during the day. Family members may provide assistance at night or on the weekend. These models aim to provide community-based day center services to older adults with highly impaired functioning with the goal of keeping the individual out of the more expensive nursing home setting

Example Innovation: PACE

The Program of All-Inclusive Care for the Elderly (PACE) is a senior-day model that requires provider groups to take on a capitated fee from Medicare and Medicaid to provide all care to elderly participants, including medical, prescription drugs and long-term care services. The participant gives up their current physician and no longer can use their Medicare Advantage plan or other fee-for-service providers. The seniors usually travel to the site for the day or half-day and are engaged in a variety of activities in addition to receiving medical care.

Barriers to implementation are similar to those of other care-coordination initiatives in that having dedicated staff and organizational buy-in can matter in making the intervention successful. While capitated payment provides an incentive to prevent avoidable hospitalizations and nursing home care, most programs only have 150-300 participants, in part because some states, such as Maryland, limit enrollees. The small size makes it difficult to spread financial

risk. To accelerate spread, Medicare and Medicaid may need to provide reinsurance or upfront capital costs.

Care Setting: Hospital or Acute Care Facility

The next care setting on the continuum is the acute care or hospital facility. These care settings are the most expensive. Innovations in these areas are targeted with both reducing the number of admissions, as well as reducing their severity.

Example Innovation: Prevention of delirium in hospitalized patients

Hospitalizations can be very disorienting for high-risk elderly patients and can cause the admission to become more severe, and therefore higher cost. The Hospital Elder Life Program (HELP) is designed to intervene in hospitalized patients with certain risk factors before they exhibit signs of delirium.¹⁸ The program uses 6 risk factors such as sleep deprivation, immobility, or dehydration to identify high-risk groups for delirium. The intervention includes cognitive stimulation, noise reduction, limb mobilization, and visual aids to orient the patients. In an early evaluation of the program, the intervention group experienced significantly fewer onsets and days of delirium. The intervention had no impact on the duration or recurrence of delirium once it had occurred.

These hospital interventions to reduce complications and readmissions take coordinated efforts on the part of hospital administrators, staff, nurses and physicians. The main barrier to spreading this intervention is the investment of resources on the part of hospitals to provide staff and resources for the extra services and improvements to the physical space. An intervention like HELP could be a prime candidate for a shared savings model with Medicare and Medicaid,

where hospitals could acquire a portion of any savings achieved in subsequently reduced nursing home care or readmissions.

Care Setting: Post Acute Care

After a hospitalization, coordination between the patient and their family, the discharging institution, the post-acute care facility and the patient's physician can be difficult. This can increase the chance the person is readmitted to the hospital.

Example Innovation: Transitional Care

The Transitional Care Model uses patient and family member education, better care coordination through an expanded electronic medical record and assistance with medication management to prevent hospital readmissions. A transition coach is assigned to work with each patient and caregiver through the discharge process, including how to communicate concerns to providers about their care. The transition coach visits the patient in the home after discharge and via phone in the post-discharge period. Randomized controlled trials of transitional care have demonstrated lower rates of re-hospitalization.¹⁹

As with many of the other care coordination models, transitional care may be most effective when implemented in integrated delivery systems or possibly within ACOs where the extra cost of the Transitional Care nurse will be offset in savings from lower hospitalizations. Medicare Advantage plans and ACOs share incentives to reduce readmissions. While hospitals will be penalized for high readmission rates as part of new health reform regulations, bundled payment for patients at high risk of readmission might be a more effective payment model for aligning incentives to reward reduced hospital readmissions and more effective post-acute care.

Care Setting: Long-Term Care

The final care setting on the continuum is a nursing home for elderly persons with significant healthcare needs and who need 24-hour assistance with activities of daily living. Nursing home residents need special care to prevent hospitalizations.

Example Innovation: INTERACT

The Interventions to Reduce Acute Care Transfers (INTERACT) is a model that prepares staff at all levels within a nursing facility to prevent and manage the conditions of nursing home residents that otherwise would require hospitalization. Staff members are trained in the use of a variety of checklists such as “Stop and Watch” and “Advanced Care Planning Tools.” In a study of 25 nursing homes across Florida, Massachusetts and New York, self-reported 6-month hospitalizations dropped significantly compared with the same 6-month period of the previous year, and study authors projected considerable Medicare savings.²⁰ As with many of the other interventions described here, INTERACT takes a champion within the organization to continually reinforce the goals of the program among staff members. The INTERACT study team found that turnover within nursing homes made the quality improvements difficult to maintain.

The Affordable Care Act allowed for demonstration projects to improve the quality of care for dual-eligibles and correct the financial misalignment among states, the federal government and providers caring for this population.²¹ The coordination office for the dual-eligibles is working with CMMI to conduct an intervention to reduce hospitalizations with “enhanced care and coordination providers,” focusing on long-term stay residents. The initiative

is applying INTERACT, as well as several other quality improvements including medication management and palliative care.

Current payment models pose difficulties in spreading this model. Hospitals lose revenue from the prevented admission. Nursing homes lose the Medicare post-acute care payments, which exceed that of the Medicaid long-term care rate. A shared savings program to allow nursing homes to accrue some of the Medicare savings through the lowering of inpatient admissions might provide appropriate incentives.

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