Appendix B. Example Care Models

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

<table>
<thead>
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<th>Program/Sponsor</th>
<th>Target Population</th>
<th>Key Components</th>
<th>Results</th>
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| Geriatric Resources for Assessment and Care of Elders (GRACE), Indiana University | Low-income (<200% of the federal poverty level) seniors with multiple diagnoses | • Support team consisting of advanced practice nurse and social worker work with elderly **in the home** and community | After two intervention years of a three-year controlled research study: 
• use of emergency department significantly lower in intervention group compared to usual care 
• hospitalization rate significantly lower in high-risk patients in intervention group compared with high-risk patients receiving usual care 
• among high-risk patients, the program was cost-neutral in the first two years, and cost-saving in the third year (postintervention) |
| Guided Care, Johns Hopkins University | Older adults with multiple chronic conditions at high risk of high health expenditures in the next year | • Predictive modeling and 12 months of claims data used to **identify** the 20%-28% of patients most at risk of needing complex care in the near future | A 32-month cluster-randomized trial at eight urban and suburban practices in the Baltimore–Washington area, representing over 900 patients and 300 family caregivers, found that Guided Care participants experienced: 
• 29% decrease in home health episodes 
• 26% fewer skilled nursing facility days 
• 13% fewer hospital readmissions 
• 8% fewer skilled nursing facility admissions 
These improvements were more pronounced among Guided Care patients receiving primary care from an integrated delivery system. |
| Naylor Transitional Care Model, University of Pennsylvania | Hospitalized, high-risk older adults with chronic conditions | • **Multidisciplinary** provider team led by advanced practice nurses engages in comprehensive **discharge planning** | Randomized controlled trial found the following one year after discharge: 
• 36% fewer readmissions 
• 38% reduction in total costs 
• Short-term improvements in overall quality of life and patient satisfaction |
| Improving Mood: Promoting Access to Collaborative Treatment (IMPACT), University of Washington | Older adults suffering from depression | • **Collaborative care**: Primary care physician works with depression care manager (e.g., nurse, social worker, or psychologist supported by medical assistant or other paraprofessional) to develop and implement treatment plan including anti-depressant medication and/or short-term counseling. Team includes consulting psychiatrist. 
• Care manager also educates patient about depression and coaches in self-care. 
• Providers utilize ongoing measurement and tracking of outcomes with validated depression screening tool, such as Patient Health Questionnaire-9, and adapt care to changing symptoms 
• Once a patient improves, case manager and patient **jointly develop a plan** to prevent relapse | A randomized controlled trial of 1801 adults age 60 or older with major depression, dysthymic disorder, or both, found that: 
• After 12 months, about half of IMPACT patients had a 50% or greater reduction in depressive symptoms from their baseline assessment compared to 19 percent of patients who received usual primary care. 
• Over a four year period, total health care costs for IMPACT patients were approximately $3,300 lower per patient on average than those of patients receiving usual primary care—even after accounting for the cost of providing the IMPACT intervention. |
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| Health Quality Partners<sup>20</sup> (participant in the Medicare Coordinated Care Demonstration) | Medicare beneficiaries with chronic conditions         | • RN care coordinators focus on changing patient behavior<sup>21</sup>  
• Focus on frequent in-person contact with both patients and physicians  
• Evidence-based patient education including condition-specific self-monitoring training<sup>23</sup> | Randomized controlled study found that after six years the intervention, among high-risk subgroup<sup>23</sup>:  
• Reduced hospitalizations by 25%  
• Reduced emergency department visits by 28%  
• Reduced average monthly Medicare Part A and B expenditures by 21%                                                                                                                                 |
| Massachusetts General Physicians Organization Care Management Program<sup>24</sup> (participant in the Medicare Demonstration for High Cost Medicare Beneficiaries) | Medicare beneficiaries who are high cost and/or have complex conditions | • Care managers are integrated into primary care practices<sup>25</sup>  
• Care managers provide patient education and address both medical and psychosocial needs  
• Focus on preventing exacerbations that lead to emergency department visits and inpatient admissions  
• Case managers also support end-of-life decision-making | After three years, intervention group exhibited<sup>26</sup>:  
• 20% reduction in hospital admissions  
• 13% reduction in emergency department visits  
• 7% annual savings after accounting for intervention costs                                                                                                                                 |
| Chronic Disease Self-Management Program (CDSMP), Stanford University<sup>27</sup> (as piloted at Kaiser Permanente, Northern California) | Adults with one or more chronic conditions<sup>28</sup> | • Patient education occurs in small group courses in a community setting, including family members and caregivers, and teaches strategies and skills to better cope with and manage common problems and symptoms  
• Course facilitated by two trained peer leaders, at least one of whom is a nonmedical professional, who often have chronic conditions themselves  
• Patients practice strategies and skills and receive highly interactive feedback in a supportive environment to enhance their sense of self-efficacy, and their confidence in their ability to manage their conditions  
• Program is of limited duration (2.5 hours per week over 6-week period) and easy to export | A randomized clinical trial of 952 patients age 40 and older with chronic conditions that compared CDSMP patients with wait-list control subjects found that after six months, treatment patients experienced:  
• fewer physician visits, ER visits, and hospitalizations and shorter lengths of stay  
• more energy, less fatigue, fewer social limitations, and greater improvement in self-reported health<sup>29</sup>  
• fewer ER and physician visits, reduced health distress, and improved self-efficacy, compared to baseline, even after two years<sup>30</sup>  
A national survey of 1,170 CDSMP participants in 17 states at baseline, six months, and one year and found:  
• significant reductions in ER visits and hospitalizations at six months and a reduction in ER visits at one year  
• potential net savings in health care costs of $364 per participant, after accounting for cost of program; if 5% of adults with one or more chronic conditions participated in program, national savings in health care costs would be an estimated $3.3 billion<sup>31</sup> |
| Care Management Plus, Oregon Health and Science University and the John A. Hartford Foundation<sup>32</sup> (piloted at Intermountain Healthcare) | Originally designed to serve adults 65 years and older, who have multiple comorbidities, diabetes, frailty, dementia, depression and other mental health needs; entry is by referral from the primary care provider. (The model has been adapted to serve non-elderly patients with complex needs.) | • Specially trained care managers (usually RNs or social workers) located in primary care clinics perform person-centered assessment and work with families and providers to formulate and implement a care plan<sup>33</sup>  
• Care manager ensures continuity of care and regular follow up in office, in the home, or by phone  
• Continuity of care enhanced by specialized IT system  
• Care manager provides coaching and self-care education for patients and families | Controlled study comparing patients receiving care management in seven intervention clinics with similar patients in six control practices within Intermountain Healthcare found:  
• decreased hospitalization rates after two years for intervention patients, although this result was only significant among patients with diabetes<sup>34</sup>  
• approximately 20% reduction in mortality among all Care Management Plus patients, reduction most pronounced in patients with diabetes<sup>35</sup>  

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**Notes:**

2. Intermountain.
4. California) Permanente, (as piloted University Stanford Program Self-Management Beneficiaries Medicare for High Cost Demonstration the Medicare (participant in Program Management Physicians General Demonstration) the Medicare (participant in Partners Health Program/Sponsor Quality 20 Disease 27 Models of Care for High-Need, High-Cost Patients with complex needs.) non-elderly patients adapted to serve (The model has been primary care provider. by referral from the health needs; entry is dementia, depression diabetes, frailty, comorbidities, who have multiple to serve adults 65 designed 28 adults 70 (as opposed to 65) defined by the model’s design, which includes conditions such as diabetes, heart disease, and chronic obstructive pulmonary disease (COPD). The model aims to address the unique needs of these high-need, high-cost patients through a comprehensive, coordinated approach. Patients are referred to the program by their primary care providers and undergo an initial assessment to identify their specific needs. This assessment guides the development of an personalized care plan that includes individualized education, counseling, and supportive services. The care plan is collaboratively developed with patients and their families, and it focuses on self-management skills, medication management, and addressing social determinants of health. Patients receive regular follow-up visits, either in person, by phone, or through virtual visits, to monitor progress and make necessary adjustments to their care plan. The care managers also connect patients to additional resources, such as support groups, as needed. The model has been shown to improve patient outcomes and reduce costs.

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**Citation:**

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

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| Hospital at Home\(^5\) (developed at Johns Hopkins University and tested in medical centers across the U.S.) | Older patients with a targeted acute illness that requires hospital-level care, who also meet validated medical eligibility criteria and live within designated geographic catchment area (e.g., 25 miles or 30-minute travel time from hospital.) | • Potentially eligible patients are identified in the hospital emergency department or ambulatory care site. If they meet the validated criteria and consent to participate, they evaluated by physician and transported home, usually via ambulance.  
• One-on-one nursing for initial stage and at least daily nurse and physician visits thereafter.  
• Both nurses and physicians on call around-the-clock for urgent or emergent visits.  
• Some diagnostic services and treatments performed in home setting.  
• Same criteria and guidelines are used to judge patient readiness for transition to skilled nursing facility, or discharge from Hospital at Home as from hospital. | Evaluation of patients in Hospital at Home program and comparison group of similar inpatients in 2009–2010\(^5\):  
• Hospital at Home patients showed comparable or better clinical outcomes and higher satisfaction levels.  
• Excluding physician costs, Hospital at Home per-patient average costs were 19% lower than similar inpatient per-patient average costs for the comparison group. Cost savings were due to lower average length-of-stay and few diagnostic and lab tests.  
Prospective quasi-experiment with patients 65 and older in three Medicare Managed Care plans at two sites, and at a Veterans Administration medical center, found that\(^5\):  
• patients treated at Hospital at Home had shorter length of stay and lower average costs than hospital inpatients. |

Notes to Appendix B

1. Indiana University, Grace Team Care, [http://graceteamcare.indiana.edu/home.html](http://graceteamcare.indiana.edu/home.html).
3. Ibid.
15. Ibid.
26. Ibid.


Bodenheimer and Berry-Millett, Care Management of Patients with Complex Health Care Needs, 2009.


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L. Cryer, S. B. Shannon, M. Van Amsterdam et al., “Costs for ‘Hospital at Home’ Patients Were 19 Percent Lower, with Equal or Better Outcomes Compared to Similar Inpatients,” Health Affairs, June 2012 31(6):1237–43.

B. Leff, L. Burton, S. L. Mader et al., “Hospital at Home: Feasibility and Outcomes of a Program to Provide Hospital-Level Care at Home for Acutely Ill Older Patients,” Annals of Internal Medicine, Dec. 6, 2005 143(11):798–808.