The following appendices are part of a Commonwealth Fund case study, Douglas McCarthy, Lisa Waugh, and Paige Nong, *Living Independently with GRACE: The Geriatric Resources for Assessment and Care of Elders Model* (Commonwealth Fund, Oct. 2021), https://www.commonwealthfund.org/publications/case-study/2021/oct/living-independently-grace.

APPENDIX A

GRACE PROTOCOLS

Geriatric Resources for Assessment and Care of Elders (GRACE) care protocols were developed at the Indiana University School of Medicine and are available through the GRACE Training and Resource Center. They address 12 issues:

- advance care planning
- health maintenance
- medication management
- difficulty walking/falls
- malnutrition/weight loss
- visual impairment
- hearing loss
- dementia
- chronic pain
- urinary incontinence
- depression
- caregiver burden

Each patient enrolled in the GRACE program is assessed to determine which protocols should be activated; all patients receive the advance care planning, health maintenance, and medication management protocols. Each protocol describes specific interventions to be considered for implementation. For example, the difficulty walking/falls protocol includes 31 suggestions for evaluation, management, consultation, and patient education, including 15 for the team to implement routinely and 16 that should be reviewed with the primary care physician.

Simplified Example: Difficulty Walking/Falls Protocol

Primary care physician review

- Confirm diagnosis and update electronic health record (EHR)
- Evaluate and treat causes
- Order lab evaluation
- Optimize pain medication
- Consult physical therapy
- Consult geriatrics or neurology

Routine team recommendations

- Monitor orthostatic vital signs
- Increase fluid intake
- Prescribe walking program
- Provide patient education on falls prevention

Data: Adapted from Steven R. Counsell, "Grace Team Care," presentation to the SNP Alliance, 2013; and Agency for Healthcare Research and Quality, *Team-Developed Care Plan and Ongoing Care Management by Social Workers and Nurse Practitioners Result in Better Outcomes and Reduced Acute Care Utilization in Low-Income Seniors and Other High-Risk Populations* (AHRQ Innovation Exchange, last updated Jan. 11, 2021).

APPENDIX B

GRACE REPLICATION SITE PROFILES

These profiles describe how the Geriatric Resources for Assessment and Care of Elders (GRACE) model has been replicated in diverse settings including Medicare Advantage plans, a medical group and provider organizations that contract with Medicare Advantage plans, and an academic medical center that serves low-income patients covered by Medicaid.

HealthCare Partners: Home Care and High-Risk Clinic Program[1]

HealthCare Partners, a large capitated medical group serving southern California and now known as Optum*, adapted the GRACE model in 2010 to enhance an existing home care program for seriously ill homebound patients. GRACE care teams also were deployed to support high-risk clinics for ambulatory patients with multiple chronic conditions. The program was led by Stuart Levine, M.D., with guidance from Steven Counsell, M.D., and experts at Indiana University School of Medicine.

A risk stratification model identified frail elders, age 70 and older, who accounted for the top 5 percent of the medical group's inpatient costs. (After a study revealed that an early version of the program did not yield cost savings,[2] the risk model was enhanced with clinical criteria to better identify patients with complex needs amenable to intervention.) Enrolled patients had been hospitalized three or more times in the past year, on average. Many homebound participants had advanced illness; a large proportion transferred to hospice within a year of enrollment.

Levine observed that the success of the program relied on gaining acceptance and buy-in from primary care physicians, who referred patients to the program and monitored their progress. The nurse practitioner and social worker on the team also could admit patients to the program based on their acuity. GRACE care protocols were embedded in the electronic health record system.

The medical group enhanced the GRACE model in several ways. Care teams engaged in brief daily huddles to review patient needs and coordinate handoffs in care. The program encouraged patients to call a designated number when they had symptoms (clinical office staff triaged these calls) and to visit contracted urgent care centers after hours to avoid ED visits. The urgent care centers notified the medical group of patients seen during the evening so that the team could follow up the next day.

After 12 months, the program produced measurable results among homebound patients, including improved patient satisfaction and quality of life, and reductions in ED visits (22%), hospital admissions (34%), and admissions to subacute care (44%).[3] Although the GRACE model is no longer formally in use at the medical group, GRACE care protocols continue to be used in its House Calls program, which integrates nurse practitioners and social workers on care teams.[4]

Indiana University Health Plans: GRACE Program[5]

Indiana University Health Plans (IUHP) adopted the GRACE model in 2011 to serve frail elderly Medicare beneficiaries (age 65 and older) in its Medicare Advantage plan and, more recently, in a Next Generation accountable care organization (ACO). Participants also include low-income seniors who are dually eligible for Medicare and Medicaid. Launched in two primary care offices that served a large proportion of elderly patients, the program expanded over time to include other primary care practices.

The GRACE program is targeted to high-risk patients who require more comprehensive, holistic care than they can receive during an office visit and for whom a home visit will provide valuable insight for geriatric management. GRACE care teams, made up of a nurse practitioner and a clinical social worker, each handle a caseload of approximately 100 patients. Patients are enrolled in the program for at least one year, and often longer, until the team determines they are stable for discharge (average length of enrollment is about 18 months).

The geriatrician managing the GRACE program also consults for IU Health's Acute Care for Elders (ACE) program, which improves communication between the

* HealthCare Partners was acquired by Optum in 2019.

GRACE care team and the inpatient team when a GRACE participant is admitted to the hospital. Hospital social workers also communicate with their counterparts on the GRACE care teams to ensure that psychosocial needs are addressed and avoid duplication of care. A common electronic health record facilitates efficient electronic communication between the GRACE care team and clinicians across the system.

When the program started, patients were enrolled through referrals from primary care offices. This approach expanded to include patients discharged from the hospital, using a GRACE tracking system that identifies potential participants based mainly on utilization criteria including frequent hospitalizations. Over time, referrals have more frequently come from primary care providers (PCPs) based on clinical risk factors. "We try to point the PCPs in the right direction for referrals with the risk stratification models, but we allow the physicians to have the final say" on enrollment in the program, says Richard Bernhardt, M.D., population health medical director for IU Health Physicians, which participates in IUHP.

Physicians view assistance with medication management as one of the most useful parts of the GRACE program, according to Kofi Quist, M.D., medical director of the GRACE program at IUHP. The GRACE medication management protocol helps the care team approach the problem in a systematic fashion, which is especially important for patients whose care is complicated by dementia. To gain physician buy-in to the program, Quist stresses that GRACE is an extension of their practice to promote holistic care. "We don't take over the patient; our goal is to augment what they do," he says. Addressing geriatric syndromes and psychosocial needs frees the physician to focus on managing chronic conditions. He notes that patients tend to do better because the GRACE team ensures regular follow-up with the primary care physician.

Using a dashboard, a GRACE coordinator tracks which care protocols have been activated for each patient. These data are analyzed during weekly case reviews and annual assessments. Protocol-driven care has increased the use of specialty care; for example, routine screening for depression has promoted consultations with a mental health professional and the prescription of antidepressant medication when needed.

The GRACE program at IUHP has shifted spending away from emergency and acute hospital services and toward preventive and chronic care services, according to the health plan's leaders. Two years after implementing the program, the rate of inpatient admissions fell 43 percent, from 1,226 to 699 per 1,000 members, while total costs fell by 30 percent, or $627 per member per month.[6]

According to Quist, the value of the GRACE model is that it can catch geriatric syndromes such as cognitive issues, which can be missed during a brief primary care visit. "You provide the care to them in the house, which is an ideal environment to look at the patient, because that's their stable, everyday environment," he says.

> ***"I think of the many instances where just having a care manager call the patient or meet them in the office is not enough. I want to actually know what's happening in the home. The ability to assess for home safety and review medications in the home is an incredibly powerful tool that GRACE offers that we otherwise would not have."***
>
> *— Richard Bernhardt, M.D.*

University of California–San Francisco Health: Care Support Program[7]

University of California–San Francisco (UCSF) Health received financial assistance from the SCAN Foundation in 2012 to replicate the GRACE model with technical support from Indiana University. The program was launched under the leadership of Helen Kao, M.D., and promoted and refined under the leadership of Christine Ritchie, M.D.

The UCSF team used the GRACE model to design the academic medical center's first formal, systemwide ambulatory care management program, called Care Support. The impetus for the program was the opportunity to earn performance incentives under

California's Medicaid Delivery System Reform Incentive Program, and the subsequent California Public Hospital Redesign and Incentives in Medi-Cal (PRIME) program. While the Care Support program enrolls patients covered by any type of insurance, UCSF serves a disproportionate share of low-income patients enrolled in California's Medicaid program, known as Medi-Cal.

The cross-disciplinary Care Support team serves multiple ambulatory care sites across the UCSF health system, including general medicine, family medicine, and geriatrics clinics. Two nurse practitioner–social worker dyads each manage a caseload 60 to 80 patients in their homes, or during clinic visits when patients prefer to meet there. Some assessments are conducted by telephone when it is not possible to make home visits. UCSF adapted the GRACE model by adding a health care navigator to handle patient scheduling and arrange services, thus increasing efficiency by ensuring that licensed providers are working at their full scope of practice.

The UCSF Care Support program is unique among GRACE replication sites in enrolling both elderly and nonelderly adults. Leaders who designed the Care Support program studied a variety of care models before deciding that GRACE could be applied to a broader enrollment group. To meet the needs of nonelderly adults, UCSF expanded the GRACE care protocols to include additional topics such as substance use and obesity. Care Support focuses on helping patients set and attain their goals within a shorter enrollment period (six to nine months) than the traditional GRACE model. This high-intensity approach keeps average enrollment to under one year. Under this configuration, the program serves approximately 400 to 450 patients each year.

An evaluation conducted by Ritchie and her colleagues found that the Care Support program achieved positive outcomes while maintaining key features of the GRACE model.[8] A significant reduction in hospital admissions and ED visits was driven primarily by an increase in the proportion of patients with no hospital use: from 33 percent preenrollment to 60 percent postenrollment. The proportion of patients who reported that their health was somewhat or much better than three months ago increased from 36 percent at enrollment to 64 percent at nine months of participation in the program.

> ***"It was critical for us to make these kinds of services available to everybody who fell into a high-complexity, high-need category if we were going to try to right-size care for all of the patients provided care through UCSF."***
>
> *–Christine Ritchie, M.D.*

The program appeared to confer the greatest benefit on patients with multiple, complex conditions; those with little social support; and those with mild anxiety. Conversely, the care team reported the program was less effective in meeting the needs of patients with severe mental illnesses, who needed more intensive resources and support.

The UCSF team identified three critical aspects that contribute to the success of the Care Support program there. First, care plans are patient-centered and customized to the complex needs of the patients. Second, patients and families are given caregiver and self-management support to overcome barriers to care. Third, the staff build relationships with these patients resulting in improved self-management and engagement with the health care system.

> ***"We found that expanding on the multidisciplinary GRACE model allowed us to impact unnecessary health system utilization while doing meaningful, patient-centered work."***
>
> *— Gina Intinarelli, R.N., Ph.D., vice president of population health UCSF Health*

Blue Cross Blue Shield of Michigan: High Intensity Care Model[9]

Blue Cross Blue Shield of Michigan (BCBSM) adapted the GRACE model to create a High Intensity Care Model (HICM) for physician organizations (POs) participating in its Medicare Advantage Preferred Provider Organization Plan. HICM was designed to improve care coordination and quality of life for high-need, high-cost Medicare beneficiaries with multiple chronic conditions and functional limitations, while also increasing the cost-efficiency of care and addressing gaps in care as measured by Medicare STAR ratings.[10] The model is part of the BCBSM Value Partnerships Program that engages 40 POs statewide. It supplements an existing provider-delivered care management program and builds on a patient-centered medical home initiative that has delivered promising results.[11]

After a pilot test in eight POs, six chose to participate in HICM with an initial enrollment of approximately 1,500 patients. (Four POs continue to participate as of August 2021, while another created its own program.) Participating POs, which received training on the program, are based in different regions of the state and represent an average of 270 physician practices each. To differing degrees, they serve as HICM coordinators, with some POs directly employing care managers or contracting with home care services on behalf of their physician practices.

HICM comprises five core components of the GRACE model (box). These program elements were commonly adopted across participating POs, but each organization adapted the program based on their structure and the needs of their affiliated practices. For example, rather than adding a social worker to the care team, some practices that already employed care managers chose to adapt their role to include assessing and addressing social needs. Sites that added a social worker to the team reported that their contributions were highly valued by primary care physicians.

Home visits were particularly challenging to implement for many POs and were not consistently required despite their perceived value in the design of HICM. This barrier was primarily caused by the large geographic area served by some POs, which made it infeasible to deploy home visit teams everywhere. The most common program modification was to conduct assessments in the physician's office rather than in the patient's home. The use of telehealth increased during the COVID-19 pandemic, which allowed virtual visits with patients in their homes.

Health plan leaders say the greatest benefit of HICM is improving care transitions and access to care for aging individuals who may have difficulty seeing their physician on a timely basis. Regular contact with the care team helps to address social isolation as well as other unmet needs, especially when patients receive services in their homes. The program also improved medication adherence and management, and guided patients into palliative care at an earlier point in their care trajectory, according to a former program leader.[12]

Some POs reported cost savings and decreased ED visits and hospital use related to their participation in HICM. The most commonly reported benefit was high patient satisfaction with the program. PO leaders observed that primary care providers valued information about their patients gleaned from the HICM care teams and home visits, which would not otherwise have been known to them. Physician buy-in, referral, and engagement were all critically important to successful implementation of HICM by POs.

BCBSM pays POs a global monthly fee for each member engaged in HICM to cover care coordination, phone encounters, and team conferencing.[13] Health plan leaders noted that a program like HICM can be cost effective for

Core Components of HICM

1. Comprehensive health care assessments
2. Full care management assessments
3. Patient care plans
4. Care transition management and palliative care teams
5. Care coordination

larger organizations to implement to the degree that the number of patients served is large enough to justify the investment in required infrastructure. This was more feasible when a PO could share resources across multiple care management programs that it managed.[14] Leaders of POs that did not adopt HICM reported that it would have been too costly to add the model to their existing portfolio of programs.

"When you have all the pieces, these models can be successful. It requires community partnership to stand up a model like this."

— Amy L. McKenzie, M.D.
vice president and associate chief medical officer
Blue Cross Blue Shield of Michigan

Some POs reported challenges recruiting patients to enroll in HICM. Potential participants were sometimes suspicious of information they received about the program from outside of their primary care provider's office. Others were uncomfortable with the idea of home-based care. Care coordination across physician practices and care managers was complicated when practices used different electronic health record systems.

The HICM program is unique among sites adopting the GRACE model because of its geographic spread and its use of POs for implementation. Although implementing HICM created complexity for POs, one site noted that it valued the opportunity to participate and thereby avoid engaging with an external disease management vendor.[15] Leaders in both adopting and nonadopting POs expressed the desire for more cohesive, broadly implementable care management programs. BCBSM is currently testing the feasibility of a home-based primary care model for health plan members who would benefit from receiving more intensive and timely services in their home.

NOTES

1 Information on HealthCare Partners was provided by Stuart Levine, M.D., Minosh Mathew, M.D., and Martha Jones, all of whom were formerly employees of HealthCare Partners and managed the GRACE program there.

2 Stuart Levine et al., "Home Care Program for Patients at High Risk of Hospitalization," *American Journal of Managed Care* 18, no. 8 (Aug. 1, 2012): e269–e276.

3 Steven R. Counsell et al., "Dissemination of GRACE Care Management in a Managed Care Medical Group," poster Presentation at the Annual Scientific Meeting of the American Geriatrics Society, May 2011.

4 Glenn A. Melnick, Lois Green, and Jeremy Rich, "House Calls: California Program for Homebound Patients Reduces Monthly Spending, Delivers Meaningful Care," *Health Affairs* 35, no. 1 (Jan. 2016): 28–35; Glenn Melnick, email communication with author, Jan. 2019.

5 Information on the IUHP GRACE program was provided by Richard Bernhardt, M.D., population health medical director for IU Health Physicians; and Kofi Quist, M.D., former director of the GRACE program at IUHP.

6 Steven R. Counsell, "GRACE Team Care," presentation by the Indiana Center for Aging Research, May 2015.

7 Information on the UCSF Health Care Support program was provided by Gina Intinarelli, R.N., Ph.D., vice president of population health at UCSF Health; and Christine Ritchie, M.D., M.S.P.H., formerly professor in the Department of Medicine at UCSF and currently Kenneth L. Minaker Chair in Geriatrics and director of research for the Division of Palliative Care and Geriatric Medicine at Massachusetts General Hospital.

8 Christine Ritchie et al., "Implementation of an Interdisciplinary, Team-Based Complex Care Support Health Care Model at an Academic Medical Center: Impact on Health Care Utilization and Quality of Life," *PLoS ONE* 11, no. 2 (Feb. 2016): e0148096.

9 Information on the experience of physician organizations participating in the BCBSM HICM program was based on research sponsored by the Commonwealth Fund and conducted by Paige Nong, doctoral candidate, University of Michigan School of Public Health; and Julia Adler-Milstein, Ph.D., professor of medicine and director of the Center for Clinical Informatics and Improvement Research at the University of California-San Francisco. Additional information on BCBSM's experience was provided by Amy L. McKenzie, M.D., vice president and associate chief medical officer; Vicki Boyle, R.N., director, Provider Group Incentive Program; and Barb Brady, manager, Patient-Centered Medical Home/Provider-Delivered Care Management.

10 Blue Cross Blue Shield of Michigan, *High Intensity Care Model Self Study* (Michigan Institute for Care Management & Transformation, 2014).

11 Christy Harris Lemak et al., "Michigan's Fee-for-Value Physician Incentive Program Reduces Spending and Improves Quality in Primary Care," *Health Affairs* 34, no. 4 (Apr. 2015): 645–52; and Dori A. Cross, Genna R. Cohen, and Christy Harris Lemak, "Sustained Participation in a Pay-for-Value Program: Impact on High-Need Patients," *American Journal of Managed Care* 23, no. 2 (Feb. 2017): e33–e40.

12 Jean Malouin, "Population Health and Management of Complex Patients," presentation, Blue Cross Blue Shield of Michigan and the National Institute for Health Care Management, May 19, 2017.

13 POs are required to document contact with a patient to bill for the monthly fee. The initial cost of the program to BCBSM was $235 per engaged member per month, which may not have captured the full cost to the POs; see Malouin, "Population Health," 2017.

14 For example, the Oakland Southland Physicians Organization participates in five care management programs; see OSP Care Management Services, *Care Management Programs: 2021 Reference Manual* (OSP, 2021).

15 OSP, *Care Management Programs,* 2021.