PSNet
PATIENT SAFETY NETWORK

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

Originally published on June 12, 2020
Last updated on January 11, 2021
https://psnet.ahrq.gov/innovation/team-developed-care-plan-and-ongoing-care-management-social-workers-and-nurse

Summary

Social worker/nurse practitioner teams collaborate with a larger interdisciplinary team and primary care physicians to develop and implement individualized care plans for seniors and other high-risk patients. The social worker/nurse practitioner team also proactively manages and coordinates the patient's care on an ongoing basis through regular telephone and in-person contact with both patients and providers. The program, known as Geriatric Resources for Assessment and Care of Elders (GRACE), improved the provision of evidence-based care; led to significant improvements in measures of general health, vitality, social functioning, and mental health; reduced emergency department visits, hospital admissions, readmissions, and total bed days; and generated high levels of physician and patient satisfaction. These successes have been across a variety of health system contexts, including: a VA medical center, primary care health centers, and as a part of a Medicare Advantage plan. A recent analysis found that the reduction in service usage saved the VA medical center $200k per year for the 179 veterans enrolled in GRACE. Another analysis in primary care health centers found that the program was cost neutral for high-risk patients in the first 2 years, and yielded savings by year 3.

The program was initially designed to serve low-income seniors, but has subsequently been replicated with different populations, including adults of all ages who are high risk, Medicare beneficiaries who are 70+ with multiple comorbidities, and older veterans following an emergent hospital admission and discharge home.

Disclaimer

This innovation was identified by the AHRQ PSNet Editorial Team from the AHRQ Health Care Innovations Exchange. That resource, established by AHRQ in 2008, was retired in March 2021; AHRQ now offers select content from the Innovations Exchange, including its downloadable databases, through a microsite. This particular innovation was identified by the Editorial Team as one of continued interest and importance to AHRQ PSNet users and therefore was selected to be updated and included in this new section of the AHRQ PSNet website. To prepare this updated summary, the Editorial Team worked closely with representatives associated with the innovation. Updates included expansion of the target population, noting a large increase in the number of systems where the innovation has been implemented, the addition of new results data (including cost savings), modifications to the staffing model, new considerations for launching and sustaining this innovations, additional publications, and ensuring accurate contact information.

Contact the Innovator

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Date First Implemented

2002-01-01

Problem Addressed

Many older adults, especially low-income and other vulnerable seniors, do not receive recommended, evidence-based care in the primary care setting, including preventive services, chronic disease management, and management of common geriatric conditions. As a result, these seniors may suffer a decline in physical and functional status and end up requiring expensive emergency department (ED) or inpatient care. Although evidence-based interventions to improve outpatient geriatric care for seniors exist, most of these models are narrowly focused (on a single disease, population, or site of care) and/or are poorly integrated with primary care.

- **Failure to provide evidence-based care, especially for vulnerable populations:** A review of the care provided to more than 345,000 Medicare beneficiaries between 1994 and 1996 found that they received indicated care less than two-thirds of the time for 16 of 40 indicators studied. African Americans, low-income seniors, and residents of federally defined Health Professional Shortage Areas were much less likely to receive indicated care.
- **Negative impact on health and costs:** The failure to receive timely, evidence-based care can have a negative impact on physical and mental health and functional status, leading to increased morbidity and mortality and the need for expensive inpatient and ED care. In fact, older adults with five or more chronic conditions account for 76 percent of Medicare expenditures, and per capita health expenditures for those with five or more chronic conditions are 17 times higher than for those with no chronic conditions.
- **Limited use of existing models:** Although a variety of system-level interventions to improve quality and outcomes in older adults exist (e.g., outpatient geriatric evaluation, collaborative interdisciplinary care), many of these models have been narrowly focused on a single disease, a specific subpopulation of older adults, and/or a single site of care. In addition, these interventions are often poorly integrated with primary care and mental health services and often fail to adequately manage care transitions.

Description of the Innovative Activity

The Geriatric Resources for Assessment and Care of Elders (GRACE) model uses nurse practitioners and social workers who work together as a support team for seniors and other high-risk individuals. Key elements of the program are described below:

- **The support team:** Trained, certified nurse practitioners and licensed clinical social workers with experience in geriatrics serve on the support team. These individuals are employed by the primary care practice. Three teams participated in the 2-year pilot program, each serving two practice sites.
- **Population served:** The initial program served patients aged 65 and older who have an annual household income of less than 200 percent of the Federal poverty level, have had one or more primary care visits in the past 12 months, and who live in the local community and have access to a telephone. Different replications of the program have served different populations, including adults of all ages who are high risk, Medicare beneficiaries who were 70+ with multiple comorbidities, and older veterans following an emergent hospital admission and discharge home.
- **Initial assessment:** The GRACE support team meets with patients (and family members if available) in the patient's home to conduct an initial, comprehensive assessment, including a medical and psychosocial history, medication review, functional assessment, and review of social support and advance directives. In addition, the team performs a home safety evaluation. In one replication of the program with adults of all ages, some assessments were performed in the clinic or by phone rather than at home based on patient preferences.
- **Consultation with larger interdisciplinary team to develop protocol-based care plan:** After the assessment, the support team meets with a larger interdisciplinary team to develop an individualized

care plan. The team includes at a minimum a geriatrician or physician with expertise in caring for older adults, pharmacist and behavioral health liaison, all of whom work for the affiliated health system. The care plan is based on a set of program-specific protocols that have been adopted by GRACE for 12 conditions, such as medication management, difficulty walking/falls, chronic pain, and depression. The protocols for each condition spell out specific interventions to be considered for implementation. For each condition present, the corresponding protocol recommendations, along with additional recommendations from the team, are activated. In the replication of the program with adults of all ages, protocols were revised slightly to address an array of patient concerns beyond traditional geriatric syndromes, including substance abuse and severe mental illness.

- **Face-to-face meeting with PCP to gain plan approval:** Once the care plan is developed, the support team meets with the patient's PCP to review a computer-generated summary of the patient assessment and interdisciplinary team suggestions. Participation in these meetings is considered in the PCP's annual performance review.
- **Team-led implementation, ongoing care coordination, and follow-up:** Once approval has been secured, the support team collaborates with the PCP to implement the plan, including taking charge of ongoing care coordination and follow-up. Routine interventions based on the established protocols (often home and self-care interventions) can be implemented without the need for additional team review. Key steps in this process are outlined below:
    - **In-home follow-up visit:** The support team meets with the patient in his or her home to review the care plan and patient goals.
    - **Ongoing care coordination and case management:** The support team provides ongoing care management and coordination of care across conditions, providers, and sites of care, primarily using face-to-face and telephone contacts with patients, family members/caregivers, and providers. Face-to-face home visits occur automatically after any ED visit or hospitalization.
    - **Communication with providers:** To enhance coordination of care across settings, the support team makes contact with other providers. For example, the team facilitates consultation by a specialized geriatric inpatient team whenever a program participant is hospitalized. Providers in the primary care and specialty clinics, ED, and hospital receive automated prompts via the EMR to contact the support team for information and assistance with follow-up and coordination of care.
    - **Annual reassessment and follow-up visit:** Each year, the support team repeats the comprehensive assessment, which, in turn, triggers another collaboration with the larger interdisciplinary team to develop a new individualized care plan.
    - **Interdisciplinary team case reviews:** The interdisciplinary team reviews each case at 1, 2, 3, 6, and 9 months after the initial and annual care-planning meetings. Additional reviews are held for any patient who has a major change in status or requires ED or inpatient care.
    - **EMR support:** The nurse practitioners and social workers have access to the affiliated health system's EMR which serves as a critical support to the team in all of its activities, particularly with respect to facilitating communication and information transfer across team members and between the team and physicians.

Context of the Innovation

At the time of innovation design, Indiana University Medical Group—Primary Care, located in Indianapolis, IN, was a large primary care practice affiliated with an urban health care system (Wishard Health Services now called Eskenazi Health) serving many medically indigent patients. The practice had seven community-based health centers that provided primary care to approximately 6,000 mostly low-income seniors. Most of these seniors had Medicare coverage, while some also had Medicaid and/or received assistance from a county program that covers some or all out-of-pocket costs for people who earn up to 200 percent of the Federal poverty level.

The GRACE program represented a logical expansion of a number of other geriatric services that already existed at the health system, including an outpatient geriatric assessment and multispecialty clinic, an inpatient acute care for elders unit, a skilled nursing facility, a physician house calls program, and geriatric psychiatric care available through the health system's community mental health center. The program was developed as a way to integrate care for low-income seniors, as the fragmentation of the existing system led to missed opportunities to provide appropriate preventive, screening, and therapeutic services.

Results

The GRACE program improved the provision of evidence-based care; led to significant improvements in measures of general health, vitality, social functioning, and mental health; reduced ED visits, admissions, readmissions, and total bed days; and generated high levels of physician and patient satisfaction. Although in one evaluation, overall hospital admission rates were not affected by the program in two other evaluations, admission rates were significantly reduced. One analysis found that the program was cost neutral over a 2-year period and yielded cost savings in the third year for high-risk enrollees, while the most recent analysis found substantial net savings to the health system after program implementation.

- **Enhanced provision of evidence-based care:** Data from the EMR and patient reports were evaluated to determine what impact the program had on Assessing Care of Vulnerable Elders quality indicators, which have been tied to better survival among community-dwelling vulnerable adults. This analysis showed that program participants were more likely than usual-care patients to have their condition(s) recognized or diagnosed, receive a specialty consultation, and be provided with appropriate intervention or treatment. Participants were also more likely to receive evidence-based interventions related to preventive care, continuity of care, medication use, and end-of-life care.
- **Improved health status and self-rated health:** Compared with the control group, participants exhibited significant improvements in four of eight measures of functional status (which was measured using the eight Medical Outcomes 36-Item Short Form), including general health, vitality, social functioning, and mental health, and on the Mental Component Summary score. Another evaluation found that the proportion of patients who reported that their health was somewhat or much better than three months ago increased from 36% at enrollment to 64% at 9 months ($p = 0.002$).

- **Lower hospital utilization:** ED visits for program participants were substantially lower than for usual-care patients in all three evaluations, including a 7.1% reduction in the most recent evaluation. Effect on overall hospital admission rates differed between the three evaluations, with two showing a significant decrease and one showing no difference. However, in the study with the non-significant difference, analysis of a subgroup of patients deemed to be at high risk of hospitalization found that program participants had significantly fewer hospital admissions in the second year than did those receiving usual care. The most recent evaluation also showed a 14.8% reduction in 30-day readmissions and 28.5% fewer bed days.
- **High levels of patient and provider satisfaction:** Sixty-four percent of program participants rated their overall satisfaction with care as very good or excellent, roughly the same as those receiving usual care (62 percent). A separate survey found that physicians were much more satisfied with the resources available to treat patients under the GRACE program than under usual care.
- **Cost saving are at least cost neutral:** A recent analysis found that 179 participating patients at one VA medical center produced an estimated net savings of $200k per year due to lower utilization of ED and hospital services. In the cost analysis based on the original RCT with a larger sample, average (mean) total costs were not significantly different for enrollees than for those receiving usual care, both overall (i.e., for all participants) and for high-risk patients. For high-risk patients, however, costs declined in the third year due to lower ED and hospital utilization in the intervention group.

Innovation Patient Safety Focus

The GRACE program provides services to low-income seniors to help ensure they receive critical preventative care and to help them manage their chronic conditions. Proper preventative care and management services through this program has shown to improve patient outcomes, such reducing unplanned hospital admissions and emergency department visits.

Planning and Development Process

Key steps in the planning and development process included the following:

- **Adoption of target conditions:** Several champion PCPs and opinion leaders within the system reviewed a set of geriatric conditions that had previously been identified by an expert panel as being optimal targets for quality improvement. These individuals came to consensus on 12 conditions to be targeted.
- **Protocol development:** Program-specific protocols were developed for each of the 12 conditions based on several different published practice guidelines developed by various professional and specialty organizations and agencies.
- **Development of educational materials:** Patient education and self-management materials were developed for seniors with limited literacy skills. Materials were written at a fifth-grade level.

- **Development of Web-based tracking system:** Although the practice had its own EMR, a separate, Web-based tracking system for the GRACE program was developed to provide summary sheets for team rounds and “to-do” lists. The GRACE support team shared progress toward implementation of the care plan with PCPs using printouts from this system and summary notes entered in the shared EMR.
- **Training:** Nurse practitioners and social workers each complete a 12-session training program (with meetings held once a week) on implementing the GRACE protocols and working as part of an interdisciplinary team.

Resources Used and Skills Needed

- **Staffing:** To handle a caseload of 300 patients, the following staff are needed: three full-time equivalent nurse practitioners and social workers (i.e., each support team can handle 100 cases); 1.0 full-time equivalent administrative assistant; and 0.1 full-time equivalents (i.e., 1/2 day a week) of a geriatrician, pharmacist, and behavioral health liaison.
- **Costs:** Including salary and benefits for these personnel, mileage reimbursement, cell phone costs, home visit bags, and office supplies, the estimated direct cost of providing the GRACE program is $1,260 per patient per year, or $105 per patient per month as calculated in a cost-analysis of the original RCT. A portion of this cost is reimbursable by Medicare for nurse practitioner home visits. This cost estimate does not include office space and administrative overhead.

Funding Sources

The National Institute on Aging and Nina Mason Pulliam Charitable Trust provided funding for the initial RCT. GRACE received federal funding from the Administration on Aging, the Office of Geriatrics and Extended Care at the VA, and the Centers for Medicare and Medicaid Services to participate in a care transitions program in conjunction with the local Area Agency on Aging.

How They Did It Tools and Resources

GRACE Training and Resource Center: Director, Dawn Butler, MSW, JD, can be contacted at (317) 880-6577 and e-mail butlerde@iu.edu.

The program description, information on replication partners, and a list of training and support offered through the GRACE Training and Resource Center can be found at http://graceteamcare.indiana.edu.

Information on the Assessing Care of Vulnerable Elders measure set can be found at http://www.rand.org/health/projects/acove/about.html.

Information on the Medical Outcomes 36-Item Short Form measure set can be found at https://www.rand.org/health-care/surveys_tools/mos/36-item-short-form.html Information on the Assets and

Health Dynamics of the Oldest-Old measure set can be found at http://hrsonline.isr.umich.edu/meta/sho_meta.php?hfyle=qnaires.

Getting Started with This Innovation

- **Consider target population carefully if cost savings is a critical objective:** In the original RCT and largest of the three evaluations, the program led to fewer hospitalizations only in the patients at high-risk of hospital admission. Given that outpatient visits for prevention and chronic care also increased, a broadly targeted program could potentially result in an increase in overall costs, while a more targeted approach focused on high-risk patients is much more likely to be cost neutral or yield overall savings. However, results from another evaluation at a VA medical center demonstrated a reduction in hospital admission rates, readmission rates, total bed days, and emergency department visit rates in all patients enrolled at hospital discharge, leading to a substantial cost savings for the health system; thus, a faster return on investment can be found when GRACE is implemented as a care transitions program to prevent hospital readmissions.
- **Integrate with primary care:** Although any organization, including a health plan, could adopt the GRACE model, the case management program must be integrated with the primary care practice. The team itself can be within the practice or external to it, but the focus needs to be on identifying and treating geriatric conditions and psychosocial problems, providing care coordination, and facilitating access to needed care.

Sustaining This Innovation

- **Ensure multidisciplinary buy-in and support:** Factors contributing to the success of GRACE have included early engagement and consistent buy-in from leadership and physicians who saw the benefits of the program.
- **Align financial incentives:** The savings generated under the GRACE model will typically accrue to the payer (e.g., Medicare, Medicaid, or a health plan affiliated with either or both of these programs). Under traditional reimbursement systems, providers, including both hospitals and physician practices, will have little or no incentive to implement this kind of program because they carry the expense of the program but do not share in potential savings. Medicare Advantage plans and accountable care organizations (ACOs) are payment models that provide the opportunity for a health plan or health care system to realize cost savings through the implementation of the GRACE program.
- **Maintain relations with community-based resources:** This is especially important for programs focusing on low-income seniors and/or those with functional limitations, who are much more dependent on public and community-based resources than more affluent or highly functional populations.
- **Seek ongoing funding sources:** Although Medicare provides some reimbursement for program services, and a managed care organization may be able to fund the program out of the cost savings

generated, provider-sponsored programs operating under traditional reimbursement will likely need outside financial support to maintain the initiative over time. Indiana University Health has implemented GRACE as part of its Medicare Advantage plan and as a component of its ACO.

Adoption Considerations Use by Others (Use By Other Organizations)

Several other organizations have implemented or are working on similar programs using the GRACE model as the foundation from which to draw ideas and components. To date, the GRACE program has been successfully implemented within 26 health care systems other than the original site.

The SCAN Foundation provided a grant to implement the model for high-risk Medicare managed care beneficiaries aged 70 and older through the HealthCare Partners Medical Group in Southern California. A review of key quality indicators showed an improvement in falls, depression, medication management, and advance directives. Hospital and subacute care utilization and aggregate costs also showed favorable trends. Survey results indicated more than 90 percent of respondents believed the GRACE model increased overall patient satisfaction, improved quality of life, and helped provide comprehensive patient-centered care. Additionally, compared to the year before, patients receiving GRACE Team Care had a 22 percent reduction in emergency department visits, 34 percent reduction in hospital admissions, and 29 percent reduction in hospital-bed days. Substantial reductions in skilled nursing facility (SNF) use also occurred among patients receiving GRACE Team Care.

The Veterans Affairs (VA) Office of Geriatrics and Extended Care provided grant funding to disseminate GRACE to the Indianapolis VA Medical Center as a care transitions/care management program for at-risk older veterans. In a randomized clinical trial evaluation, GRACE enrollment was associated with 7.1% fewer emergency department visits, 14.8% fewer 30?day readmissions, 37.9% fewer hospital admissions, and 28.5% fewer total bed days of care, saving the VAMC an estimated $200,000 per year after program costs during the study for the 179 veterans enrolled in GRACE.

In 2010, funding was provided under the Affordable Care Act to expand Aging and Disability Resource Centers (ADRC). The Administration on Aging and Centers for Medicare and Medicaid Services issued a grant opportunity for “ADRC Evidence-Based Care Transition Programs.” The GRACE model was one of four evidence-based models that states could choose to implement. CICOA Aging and In-Home Solutions partnered with the GRACE program at Wishard (now Eskenazi Health) and the Indianapolis VA to provide a care transition program focusing on patients who are discharged from the hospital and already enrolled in the Medicaid Home and Community Based Services waiver. Results have shown reductions in hospital readmission rates (to <10%) at both institutions and greater access to community-based services for patients enrolled into the Indiana ADRC GRACE Care Transition Program.

GRACE Team Care was also implemented in 2011 by Indiana University (IU) Health Physicians in Indianapolis within the IU Health system and as a key component of a Medicare Advantage (MA) Plan and ACO. In comparing the 12 months before the GRACE intervention and the 25 months after the intervention,

GRACE showed a 43% reduction in hospital admissions, 51% decrease in in-patient costs, and a 30% decrease in total costs of care. In addition to the reduction in costs, evaluation of the program demonstrated an 11% increase in per member per month premium paid for members of the Medicare Advantage Plan receiving the GRACE intervention.

The SCAN Foundation also provided grant support in 2012-2013 to IU's GRACE Training and Resource Center to provide training and technical assistance to three organizations in California to replicate the GRACE model: University of California, San Francisco (UCSF); Health Plan of San Mateo; and Whittier Hospital Medical Center. These replication sites worked with community-based organizations and physician groups as replication partners. GRACE was used as a care transitions and longitudinal care management model. The SCAN Foundation is dedicated to creating a society in which seniors receive medical treatment and human services that are integrated in the setting most appropriate to their needs.

Finally, of special note, the UCSF GRACE program noted above was adapted to include adults of all ages that were at high-risk (>5 ED visits or >2 hospitalizations in the past 12 months) who attended four medical clinics in an urban academic medical center. To account for this change in population, the name was changed to Care Support, and protocols were slightly revised to address an array of patient concerns beyond traditional geriatric syndromes including substance abuse and severe mental illness. An evaluation found a significant decline in the median number of ED visits (5.5 to 0, $p = 0.015$) and hospitalizations (5.5 to 0, $p<0.001$) 6 months after enrollment compared to 6 months before enrollment. In addition, the percent of patients reporting better self-rated health increased from 31% at enrollment to 64% at 9 months post-enrollment ($p = 0.002$).

Innovator Disclosures

In addition to the external funders that supported this program that are listed in the Funding Sources section, Dr. Counsell reported receiving funding from The SCAN Foundation, Office of Geriatrics and Extended Care, and VHA. Dr. Counsell also reported receiving payments for speaking engagements and reimbursement of travel expenses from various academic and non-academic entities. Both Dr. Counsell and Ms. Butler have been supported by multiple health care organizations for the provision of consultation and training in the GRACE Team Care model.

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