The GRACE Model

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Background and Conceptual Model

Studies have confirmed what physicians and healthcare providers caring for older adults have always known, many older adults are living with multiple chronic illnesses and geriatric syndromes. Additionally, this population accounts for a disproportionate share of Medicare expenditures. Unfortunately, older adults receiving their care from primary care settings often fail to receive the recommended standards of care [1, 2].

In response to the need for new delivery models to better address common geriatric conditions and integrate medical and social care, the clinicians and researchers at the Indiana University Center for Aging Research designed and tested a new model of interdisciplinary team care called GRACE, *Geriatric Resources for Assessment and Care of Elders*. The GRACE model was originally developed to improve the quality of care for older adults. The goal of the GRACE model was to optimize health and functional status, decrease excess healthcare use, and prevent long-term nursing home placement. GRACE built on the lessons learned from prior efforts to improve the care of older adults and added several new features including integration of the geriatrics team within the primary care environment, in-home assessment and care management by a nurse practitioner and social worker team, and integration with affiliated pharmacy, mental health, home health, and community-based services [1]. The model was also designed to address barriers found at the system, provider, and patient level that were resulting in older adults having unmet healthcare needs (Fig.10.1). Through a geriatric focused assessment and ongoing proactive care management, GRACE worked through these barriers leading to improved diagnosis and treatment of geriatric syndromes higher quality of care and better outcomes.

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GRACE Team Care

Overview

The GRACE model of primary care is a cost-effective, patient-centered team care model that has been proven to improve the health of older adults by working with patients in their homes and in their communities to manage health problems, track changing care needs, and leverage needed social services [3, 4].

There are a number of unique features of GRACE Team Care including multidimensional assessment and interdisciplinary team care. The catalyst for the GRACE intervention is the nurse practitioner and social worker referred to as the GRACE Support Team. The GRACE Support Team meets with each patient in his or her home to conduct an initial geriatric-focused assessment. Following the in-home assessment, the support team meets with the GRACE Interdisciplinary Team composed of a geriatrician medical director, pharmacist, and mental health liaison to develop an individualized care plan using the GRACE protocols [1].

The GRACE Support Team then meets with the patient's primary care physician to review, modify, and prioritize the plan. The support team works in collaboration with the primary care physician and the patient to implement the plan consistent with the patient's goals [1]. The care plan contains strategies to address the medical and psychosocial issues of concern as well as elements related to maintaining quality of life and independence.

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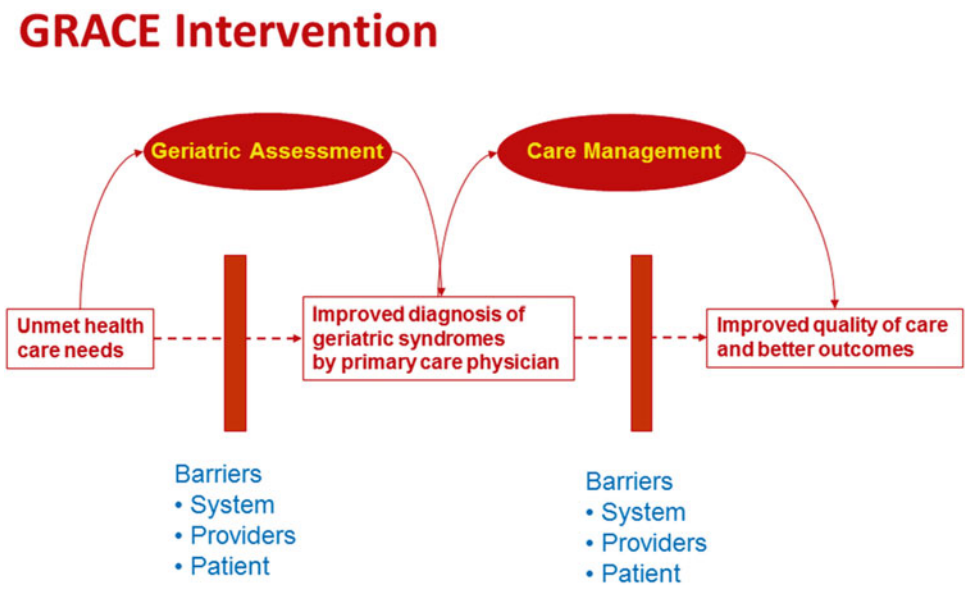

Fig. 10.1 GRACE conceptualization (From Counsell SR. The Trustees of Indiana University, Powerpoint Presentation, with permission.)

The GRACE Support Team has at least monthly contact with the patient and provides proactive coordination and continuity of care between all healthcare professionals involved in the patient's care. The GRACE team assists with transitions between levels of care by working closely with hospital, emergency department, and nursing facility staff. The GRACE Support Team collaborates with the discharging team to develop an optimal transition plan. Once the patient has returned home, the GRACE Support Team conducts a home visit to ensure the discharge arrangements are in place, complete medication reconciliation, provide support to the patient and caregiver, and connect the patient back to their primary care physician [5].

Table 10.1 Key components of GRACE Team Care

1.	In-home geriatric assessment by a nurse practitioner and social worker team
2.	Individualized care plan using GRACE protocols
3.	Weekly interdisciplinary team conference, including a geriatrician, pharmacist, and mental health liaison
4.	Review of the care plan with the primary care physician
5.	Implementation of the care plan in collaboration with the primary care physician and consistent with patient goals
6.	Ongoing care management to ensure coordination of care and smooth care transitions

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Key Components

In-Home Geriatric Assessment

There are six key components of GRACE Team Care (Table 10.1) [6]. The first step is an in-home assessment completed by the nurse practitioner and social worker simultaneously allowing for each discipline to hear and learn about issues, problems, concerns, and patient goals related to all aspects of their care. In addition to engaging and establishing the framework for GRACE involvement with the patient, the goal of the in-home assessment is to capture a comprehensive view of the older adult in their environment with the focus on identifying geriatric conditions. The GRACE Support Team's assessment findings and the patient's health goals serve as the basis for developing an individualized care plan.

During the initial home visit, the GRACE nurse practitioner and social worker each complete their respective evaluation that together make up a comprehensive geriatric assessment upon which to develop an individualized care plan (Table 10.2). The nurse practitioner conducts a medical history, detailed medication review, and brief physical examination. The examination should give special attention to orthostatic vital signs, vision, hearing, and evaluation of gait and balance. The social worker completes a psychosocial history and functional assessment, conducts screens for cognitive impairment and depression, identifies goals of care, discusses advance directives, conducts a caregiver assessment when applicable, and performs a home safety evaluation [1].

To gather a complete assessment, the GRACE Support Team also reviews past medical records and contacts other providers and/or agencies involved in the individual's health care. In addition to collecting pertinent information, agency representatives are invited to participate in the GRACE interdisciplinary team conference to provide input on the care plan development.

Individualized Care Plan and GRACE Protocols

The driver of GRACE is an individualized care plan developed by the GRACE team based on the initial in-home assessment and the patient's goals of care. The care plan is built

Table 10.2 GRACE in-home assessment domains

Nurse practitioner	Social worker
• History of present illness	• Social history
• Past medical history	• Functional status
• Medical review of systems[a]	• Caregiver status
• Geriatric review of systems[b]	• Finances
• Medication reconciliation	• Advance directives
• Orthostatic vital signs	• Depression screen
• Vision/hearing screen	• Cognitive screen
• Gait/balance evaluation	• Home safety evaluation

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[a]Medical review of systems includes cardiovascular, respiratory, gastrointestinal, genitourinary, musculoskeletal, and neurological

[b]Geriatric review of systems includes nutrition, skin, vision, hearing, dentition, continence, ambulation, feet, and cognition

Table 10.3 GRACE protocols

• Advance care planning[a]	• Caregiver burden
• Health maintenance[a]	• Chronic pain
• Medication management[a]	• Malnutrition/weight loss
• Difficulty walking/falls	• Urinary incontinence
• Depression	• Visual impairment
• Cognitive impairment/dementia	• Hearing impairment

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[a]Protocol used in initial care plan of all GRACE patients

using the GRACE protocols for common geriatric conditions (Table 10.3). These care protocols and corresponding team suggestions for evaluation and management are based on published practice guidelines and provide a checklist to ensure a standardized and state-of-the-art approach to care [1].

The GRACE Support Team selects the GRACE protocols and corresponding team suggestions as appropriate. The following protocols are selected in all patients: Advance Care Planning, Health Maintenance, and Medication Management. The selection of protocols is up to the clinical judgment of the GRACE Support Team. The GRACE Support Team identifies the contributing factors to the GRACE protocol to provide a rationale for its use. Once selecting the GRACE protocol, the GRACE team selects the corresponding team suggestions. The team suggestions are a combination of medical and psychosocial interventions. All suggestions fall within the scope of practice for an advanced practice nurse and social worker [6].

GRACE Interdisciplinary Team Conference

The GRACE Interdisciplinary Team meets once a week for about 2 h to discuss and finalize care plans for new GRACE patients, follow-up on care plan implementation for established GRACE patients, and discuss those patients identified for an "extra" team review (e.g., unexpected hospital admission). The GRACE Interdisciplinary Team is composed of the GRACE Support Team, geriatrician medical director, pharmacist, mental health liaison, and program coordinator [6].

New patients are to be presented to the team by the GRACE Support Team. In presenting the patient, the nurse practitioner and social worker provide a brief overview of the patient, the patient's health goals, and findings from the initial in-home assessment. A standard presentation format is used to allow the team members to anticipate information to be shared. The GRACE Support Team identifies the applicable GRACE protocols and shares the draft individualized care plan [6].

The interdisciplinary team members together review the proposed care plan taking one protocol at a time and in order of importance in achieving the patient's health goals. The geriatrician medical director, mental health liaison, and pharmacist each provide input to the care plan by revising and/or adding specific interventions or team suggestions [6].

In addition to new patients, the GRACE Interdisciplinary Team discusses established GRACE patients due for a routine follow-up team review. Scheduled team reviews provide an opportunity to check on progress toward care plan implementation. In addition, the team problem solves barriers to implementing team suggestions and makes adjustments to the care plan as appropriate [6].

Extra team reviews are scheduled if a patient is hospitalized, seen in the emergency department, or otherwise has a change in condition or issue for which the GRACE Support Team would like input from the GRACE Interdisciplinary Team. If following an unplanned hospitalization or emergency department visit, the extra team review should include a discussion of contributing factors and potential interventions that might be applied in the future to prevent recurrence [6].

Primary Care Physician Collaboration

The GRACE model was developed to closely align the GRACE Support Team with the patient's primary care physician (PCP). The GRACE team is meant to compliment and support the PCP in the care of their complex older patients. The GRACE Support Team should be considered an extension of the PCP and office staff, providing regular follow-up and communication with the PCP as needed or requested. Once the GRACE Interdisciplinary Team finalizes a new patient's care plan, the nurse practitioner with or without the social worker meets with the PCP to discuss the care plan, prioritize interventions, and coordinate implementation [1]. Meetings with the PCP occur at a time convenient for the PCP and outside of scheduled clinic time to avoid disrupting patient appointments.

Discussion with the PCP focuses on the high priority items such as medication recommendations, consultations, and labs. The extent of care to be provided by the GRACE team is a key discussion area for the PCP and GRACE nurse

practitioner. The comfort level of the PCP with having the GRACE nurse practitioner handle certain issues that are generally done in the office setting (e.g., starting new medications, titrating current medications, and ordering lab tests) should be taken into account and discussed. The focus of the GRACE nurse practitioner should be on implementing the GRACE care plan and providing proactive care management that supports the patient's office-based primary care physician. After reviewing the GRACE care plan and making any necessary revisions as directed by the PCP, the care plan is signed by the PCP and a copy is provided to the PCP for the patient's chart. The GRACE Support Team will bring to the attention of the geriatrician medical director any questions or concerns of the PCP related to the GRACE care plan and team suggestions. A reference file is maintained to include medical literature that can be provided to the PCP in response to questions as needed [6].

Care Plan Implementation and Care Coordination

The nurse practitioner and social worker will collaborate with the PCP to implement the GRACE care plan consistent with the agreed upon goals of care and priorities identified through discussion with the PCP and patient. In the week following the meeting with the PCP, the GRACE Support Team schedules a home visit to review the care plan and begin to implement the highest-priority interventions. During the first follow-up visit to review the care plan, the GRACE Support Team also provides the patient with both verbal and written educational material specific to older adults regarding general health, wellness, and safety. The educational information generally includes medication safety, fitness, nutrition, vaccinations, and community resources and safety tips. The GRACE Support Team keeps the PCP informed of their progress in implementing the care plan, including any difficulties encountered or needed adjustments [6].

As part of the care plan implementation, the GRACE Support Team assists with care coordination across the multiple sites and providers involved in a patient's care. The GRACE team utilizes a collaborative interdisciplinary team approach across the continuum of care to optimize coordination of care and patient function and independence. Patients and their caregivers are encouraged to contact their assigned GRACE Support Team should they feel they need assistance [1].

The GRACE Support Team is often notified if a patient visits the emergency department or is hospitalized to aid in smooth care transitions and care coordination. GRACE teams also monitor upcoming patient appointments to provide patient reminders. Before a GRACE patient's office visit with his/her PCP, the GRACE Support Team will often help prepare both the patient and PCP for the visit. The nurse practitioner and social worker can coach the patient about questions to ask her/his PCP and also inform the PCP or office staff of issues that need to be addressed during the patient's office visit. The GRACE Support Team offers assistance as needed in facilitating the patient's office visit (e.g., help with securing an appointment and/or transportation arrangements) and makes GRACE materials available to optimize the patient's visit (e.g., GRACE care plan, current medication list, completed lab requisitions, etc.) [6].

Proactive Care Management

The GRACE Support Team maintains regular contact with GRACE patients to work toward care plan implementation and to monitor the patient's status and concerns. GRACE patients receive at a minimum a face-to-face visit or telephone call each month. These proactive contacts help build trusting relationships with patients while monitoring and assisting patients in pursuing their health goals. Additionally, these contacts provide an opportunity for the GRACE Support Team to check in on the patient's care plan, identify new issues or problems, discuss medication changes, review physical activity and socialization, and monitor for changes in function, living arrangements, and social supports [1].

The care plan is reviewed with the GRACE Interdisciplinary Team at regular intervals. During these "routine" team reviews, the GRACE Support Team discusses the patient's current status and progress toward implementation of the care plan. Any new problems or issues necessitating team discussion should also be covered during routine team reviews. If the GRACE Support Team has new concerns about a patient or the patient is admitted to the hospital, seen in the ED, or has a change in condition, the patient is brought up for an "extra" team review [1].

GRACE patients who remain with the program receive an annual in-home assessment. The annual assessment process and forms are the same as the initial assessment. A new care plan is drafted by the GRACE Support Team and presented to the interdisciplinary team for input similar to the initial assessment. As with new GRACE patients, the annual assessment and new care plan are reviewed with the PCP and follow the same process of implementation as occurs with new GRACE patients [6].

GRACE Interdisciplinary Team

The strength of GRACE is the team approach. From the initial in-home assessment to implementation of the interdisciplinary team suggestions to ongoing care management, GRACE brings together a support team and expanded interdisciplinary team to work collaboratively with the patient and his/her primary care physician to develop and implement an individualized care plan and provide comprehensive care.

The core GRACE Interdisciplinary Team, in addition to the GRACE Support Teams, includes the geriatrician medical director, mental health liaison, pharmacist, and program

coordinator [6]. Additional disciplines have been included as needed for valuable input to care plan development and to serve as a resource to the GRACE Support Team. These disciplines have included a physical therapist, occupational therapist, and community resource liaison [1].

All team members play a vital role in optimizing the health and quality of life of patients enrolled in the GRACE program. Each team member has specific job responsibilities to execute before, during, and after the weekly team conference. By having specific and predetermined responsibilities, each team member knows their role and what information is to be shared and discussed in the interdisciplinary team conference.

The GRACE team geriatrician medical director reviews the nurse practitioner and social worker assessment forms prior to the team meeting. During the team conference, the geriatrician helps clarify the medical problems and geriatric syndromes. While providing input on the care plan, the geriatrician helps the GRACE Support Team draft the care plan in physician language. A key role of the geriatrician is to help the team prioritize implementation of the care plan. Between team meetings, the geriatrician serves as resource to the team members and helps answer questions of the primary care physicians [6].

The pharmacist also plays an important role on the GRACE Interdisciplinary Team. Prior to the weekly team conference, the pharmacist reviews patient pharmacy records looking for medication adherence trends and considers possible medication recommendations. During the team conference, the pharmacist advises the team on potential impact of medications, provides recommendations for alternatives, assists in identifying cost-effective options, and addresses questions from the GRACE Support Team. Between team meetings, the pharmacist is available to the team as an additional resource and as liaison to the pharmacy department [6].

The mental health liaison also plays a valuable role with the GRACE team. As with the pharmacist, the mental health liaison reviews the mental health records of any patients that are due to be discussed in the team meeting. During the team meeting, the mental health liaison provides input to the care plan on symptom management, supportive measures, treatment recommendations, and other potential interventions. The mental health liaison is available to the GRACE team in between team conferences to serve as a liaison between GRACE and mental health providers and as an additional resource for the team [6].

The GRACE program coordinator is responsible for answering all incoming calls on the dedicated GRACE phone line, contacting potential patients to begin the enrollment process and scheduling the initial home visit. The coordinator manages the GRACE databases including the tracking of care plan review schedules and outcome metrics. Before the team meeting, the program coordinator notifies all GRACE team members of the patients that will be reviewed during the upcoming team conference. The program coordinator attends the team meetings to work collaboratively with team members implementing care plans and ensuring follow-up on agreed upon priorities for individual patients. Following the team meeting, the coordinator assists the GRACE Support Team with on-going care management, scheduling appointments, and coordinating transportation [6].

Integration with the Electronic Medical Record

Optimally, all GRACE documentation is made in the health system's Electronic Medical Record (EMR) in a designated area for easy reference by the PCP. If the GRACE initial assessment and care plan documentation are not part of the EMR, a succinct summary is entered or scanned into the EMR including key findings and planned interventions to facilitate coordination of care. A Subjective Objective Assessment Plan (SOAP) note is entered into the EMR after each contact with the patient, including visits and telephone calls. It is important to have this documentation in the medical record to aid in continuity of care and to keep primary care and specialty providers informed regarding the GRACE team's interventions and patient's progress [6].

An Evidence-Based Approach

GRACE Randomized Controlled Trial

The GRACE model was rigorously studied through a large, randomized controlled trial at Eskenazi Health (formerly Wishard Health Services), a public safety-net healthcare system in Indianapolis, Indiana [7]. A total of 951 patients were recruited from six community-based primary care practices affiliated with Eskenazi Health—474 to the GRACE intervention group and 477 to the control group. Patients who were 65 years and older, had one or more visits with their primary care physician in the last 12 months, and had an annual income below 200 % of the Federal Poverty Level were eligible to participate. Patients and primary care physicians were randomized for participation in the study with participants receiving the GRACE intervention for 2 years. Outcome measures were determined based on patient interviews using the Assessing Care of Vulnerable Elders (ACOVE) quality indicators, Medical Outcomes 36-Item Short Form scales, and functional status through metrics from the Assets and Health Dynamics of the Oldest-Old (AHEAD) survey. Acute care utilization including hospital admissions, hospital days, and emergency department visits were obtained from a regional health information exchange.

Patients with a score of 0.4 or higher on the probability of repeated admissions (PRA) screen were considered high risk of hospitalization.

Overall, participants enrolled in the GRACE trial were similar between the GRACE intervention and control groups with mean age of 72 years, 76 % women, 59 % black, and all were socioeconomically disadvantaged. Study participants receiving the GRACE intervention reported improved quality of life and better performance on quality indicators (Table 10.4). Specifically, participants reported improved quality of life in areas of general health, vitality, social function, and mental health. Performance on quality indicators related to general health care (e.g. immunizations, continuity of care) and geriatric conditions (e.g. falls, depression) was also better in the GRACE intervention group compared to control. Patients and their physicians reported high rates of satisfaction with the GRACE model [1, 7].

In patients considered at high risk for hospitalization by their PRA score, those participants receiving the GRACE intervention had fewer hospital admissions compared to the control group (Table 10.4 and Fig. 10.2). Of particular note, the trend in reduced hospitalization rates in the high-risk GRACE intervention group compared to control persisted in the third year, the year following when the GRACE intervention ended. A thorough cost analysis was conducted on the GRACE model. Among high-risk patients, the cost savings from lower acute care utilizations resulted in cost savings in year 2 and 3 while accounting for GRACE program costs [3] (Table 10.4 and Fig. 10.3).

Table 10.4 Results of GRACE randomized controlled trial[a]

Better quality and outcomes in GRACE patients
• Enhanced quality of life by SF-36 scales[b]
• General health, vitality, social function, and mental health
• Mental component summary
• Better performance on ACOVE quality indicators[b]
• General health care (e.g., immunizations, continuity of care)
• Geriatric conditions (e.g., falls, depression)
• Fewer ED visits
• 12 % in year 1
• 24 % in year 2[b]
Decreased hospital admissions and lower costs in high-risk GRACE patients
• Reduction in hospital admissions
• 12 % in year 1
• 44 % in year 2[b]
• 40 % in year 3 (post-intervention year)[b]
• Lower readmission rates
• 74 % for 7-days[b]
• 45 % for 30-days
• 40 % for 90-days[b]
• Lower total costs
• 2 % in year 1
• 17 % in year 2
• 23 % in year 3 (post-intervention year)[b]

Data from Counsell SR, Callahan CM, Clark DO, Tu W, Buttar AB, Stump TE, Ricketts GD. Geriatric Care Management for Low-Income Seniors: A randomized controlled trial. JAMA. 2007;298(22):2623–33

[a]*SF-36* medical outcomes 36-item short-form, *ACOVE* assessing care of vulnerable elders, *ED* emergency department

[b]Statistically significant difference compared to control group ($P < .05$)

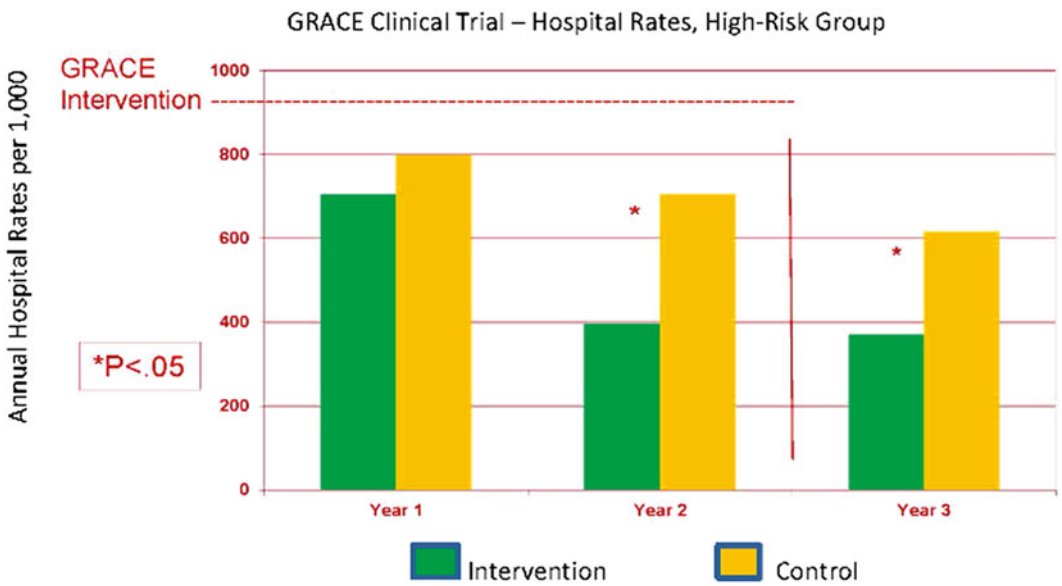

Fig. 10.2 GRACE Randomized controlled trial hospitalization rates of the high-risk group (From Counsell SR. The Trustees of Indiana University, Powerpoint Presentation, with permission.)

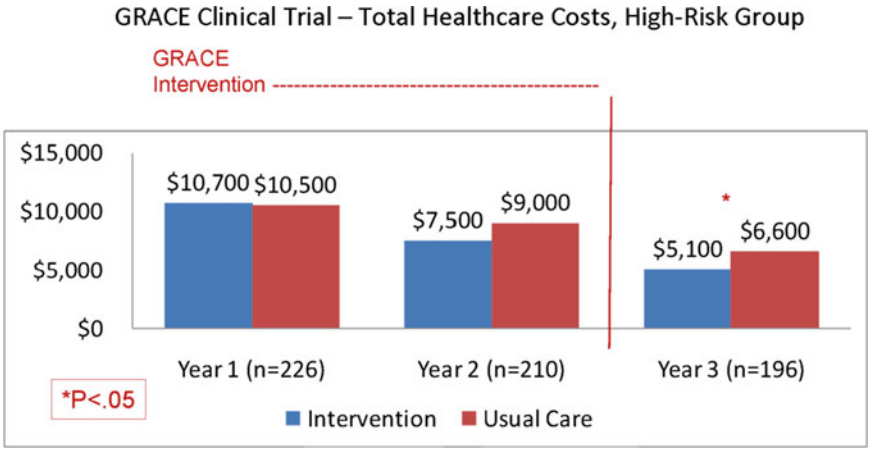

Fig. 10.3 GRACE Randomized controlled trial total healthcare costs (From Counsell SR. The Trustees of Indiana University, Powerpoint Presentation, with permission.)

Replication Experience

GRACE Team Care was designed and tested in a public safety net healthcare system and community health centers serving a disadvantaged population including low-income seniors. Since the completion of the randomized control trial, GRACE Team Care has been successfully replicated in a variety of healthcare settings. GRACE has been implemented in health plans, integrated systems, the VA healthcare system, and a large managed care medical group (Table 10.5). In each of these settings, when targeted to high-risk seniors, the GRACE model has demonstrated a positive impact on the quality of care and reduced acute care utilization.

HealthCare Partners in Los Angeles, California implemented the GRACE model in their HomeCare Program serving chronically ill and homebound patients and involving physicians, nurse practitioners, and social workers [8]. HealthCare Partners leadership and staff involved in GRACE implementation rated GRACE as very helpful in providing care to older frail patients and reported that the GRACE model better identified important psychosocial issues and geriatric conditions in their patients, improved medication management and follow-up, and helped coordinate care compared to before GRACE.

The Indianapolis VA Medical Center enrolled older Veterans upon discharge home following a non-elective hospital admission [8]. In this application of the GRACE model, the GRACE nurse practitioner and social worker started with a transition visit in the home soon after hospital discharge and then subsequently, when the patient was more stable, conducted the initial GRACE assessment and developed an individualized care plan using the GRACE protocols. In addition to seeing the gains in recognition and treatment of geriatric syndromes and improved care coordination, older Veterans who enrolled in GRACE had a nearly 50 % reduction in their 30-day readmission rate.

Table 10.5 GRACE Team Care replication partners

Indiana	*Michigan*
• Eskenazi Health (formerly Wishard Health Services)	• University of Michigan Health System
• IU Health Medicare Advantage Plan	• Blue Cross Blue Shield of Michigan
California	*VA Healthcare System*
• HealthCare Partners	• Indianapolis VAMC
• UCSF Medical Center	• San Francisco VAMC
• Health Plan of San Mateo	• Cleveland VAMC
• Whittier Hospital Medical Center & Central Health Plan	• Atlanta VAMC

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In 2010 the Administration on Aging (now Administration for Community Living) and the Centers for Medicare and Medicaid Services issued funding for "Aging and Disability Resource Centers (ADRC) Evidence-Based Care Transitions Programs." The goal of this funding opportunity was to promote ADRC partnerships with hospitals and physician groups to provide better transitions and care coordination. The GRACE model was one of four evidence-based models that states could implement. Indiana was awarded a grant using the GRACE model, however, with a slightly different staffing model where a social worker from the ADRC served in the GRACE social worker role while the nurse practitioner was from the medical group. Here again, 30-day readmission rates dropped by more than half in patients enrolled in the Indiana ADRC Care Transitions Program [8, 9].

In the replication with Indiana University Health Medicare Advantage plan, health plan members 65 or older were enrolled into the program through various sources including: hospital or skilled nursing facility discharge to home, risk stratification using administrative data, and primary care physician referral [8]. In addition to demonstrated improvements in the quality of care and care coordination, physicians

requested expansion of the program from the pilot practice sites to all of the IU Health Physician's primary care practices since they found the program to be especially helpful in providing comprehensive care to their frail older patients.

As seen in the various replications described above, the GRACE model is flexible to meet diverse patient and healthcare system needs, processes and goals. Due to the results outlined above and concomitant demonstration of substantial reductions in hospital admissions in patients served by the programs, the GRACE model has been sustained in each of these healthcare systems.

Who Benefits from GRACE Team Care?

Evidence from the GRACE Trial

The GRACE model was originally tested in low-income seniors obtaining primary healthcare services through one of the community health centers of an urban public safety-net health system. Compared to the control group, the GRACE intervention group was shown at the end of 2 years to have a higher quality of life, received better quality of care, and less frequently visited the emergency department (Table 10.4). High-risk patients enrolled in the GRACE intervention group (25 % of enrollees) were also less frequently hospitalized and had lower total healthcare costs over time compared to high-risk patients in the control group (Table 10.4). In the low-risk patients enrolled in the GRACE intervention group (75 % of enrollees), however, hospitalization rates were similar and total costs were higher (due to the costs of the GRACE intervention) compared to low-risk patients in the control group. Thus, both black and white low-income seniors, and those at low and high risk for hospitalization, appeared to benefit from GRACE related to the quality of healthcare they received and their reported quality of life. Whether or not results of the GRACE trial can be extrapolated to people of higher socioeconomic status and those living in rural communities cannot be determined from the original study [7, 10, 11].

Patient Selection Strategies for Cost Savings

To deploy the GRACE model in a cost neutral or cost savings manner, it is necessary to select patients at high risk of hospitalization or otherwise having high healthcare utilization and costs. It is in these high-risk patients that the GRACE trial demonstrated reduced acute care costs that offset the costs of the GRACE intervention and has the potential for overall cost savings [3]. In the original GRACE trial, "high risk" was determined by the Probability of Repeated Admission (PRA) Questionnaire which has been used extensively in managed-care settings to identify older adults at high risk for subsequent hospitalization and high healthcare costs [7]. A PRA risk score is calculated based on age, sex, perceived health, availability of an informal caregiver, heart disease, diabetes, physician visits, and hospitalizations. Other surveys and predictive modeling tools exist for identifying high-risk older patients [10, 12]. Selecting an approach that identifies a population of seniors having high baseline rates of hospitalization (e.g., 1,200 admissions per 1,000 per year or greater) helps ensure the opportunity to reduce hospital admissions and costs such that GRACE program expenses are covered and overall cost savings are realized. Enrollment criteria that help identify high-risk and high-cost older patients likely to benefit from GRACE Team Care include: (a) multiple chronic illnesses with functional limitations, (b) one or more non-elective hospitalizations in the prior year, (c) diagnosis of depression or dementia, (d) nine or more prescription medications, (e) lives alone or with a frail spouse, (f) low health literacy, (g) cultural or financial barriers, and (h) dually eligible for Medicare and Medicaid.

The Business Case for GRACE

GRACE Team Care provides a number of clinical and financial incentives to health systems and especially those oriented toward shared risk. Although the specific business case will vary depending on the health system's reimbursement model (fee-for-service, managed care, or accountable care organization), GRACE Team Care has been proven in multiple settings to be a cost-effective program in caring for high-risk older adults. While improving the quality of life for program participants, GRACE has been shown to significantly reduce emergency department visits, hospital admissions, 30-day readmission rates, and stays in skilled nursing facilities. These reductions in acute and post-acute care present savings and value-based opportunities for healthcare systems and managed care organizations [3]. GRACE uses a dashboard to monitor quality indicators to assist organizations in reaching targeted quality goals too; and has consistently received high satisfaction ratings from patients, caregivers, and providers. Thus, GRACE Team Care brings added value to a healthcare system or physician organization by improving quality and lowering costs in high-risk and complex older adults.

As discussed above, cost savings and thus also a "return on investment" for GRACE Team Care can best be achieved by selecting high-risk older patients for enrollment in the program [12]. Examples of enrollment criteria are provided above that help identify patients having a high baseline hospitalization rate and/or that are in the top 20 % of expenditures

Table 10.6 Business case for GRACE[a]

Costs	Return
• 7 FTE (3 nurse practitioners, 3 social workers, 1 coordinator)	• ↓ 30 % Hospital admits
• 0.3 FTE (0.1 medical director, 0.1 mental health liaison, 0.1 pharmacist)	• ↓ 25 % ED visits
• Mileage home visits	• Appropriate risk adjustment
• Increased mental health and rehab utilization	• Better satisfaction and quality scores
• Caseload of 300	• Primary care physician efficiency gains

From Counsell SR. The Trustees of Indiana University, Powerpoint Presentation, with permission

[a]*FTE* full time equivalent employee, *ED* emergency department

Table 10.7 Less quantifiable benefits of GRACE Team Care

• Improved patient experience and market/patient loyalty
• Reduction in 30-day readmission rates and avoidance of Medicare penalties
• Prevention or delay of institutional long-term care
• Better performance on quality metrics with significant upside potential from incentives in risk contracts
• Greater office efficiency and job satisfaction of primary care providers
• Increased revenue from more appropriate documentation and risk adjustment
• Assistance to patients to optimize health insurance coverage (e.g., Medicaid) and benefits that offset out-of-pocket costs
• More appropriate utilization of home and community-based services
• Keep hospital bed capacity open for higher revenue patients
• Reduced hospitalization rates also reduce pressure for capital dollars and construction of new hospital beds, impacting total cost of care in a community

From Geriatrics GRACE Training and Resource Center. The Business Case for GRACE. The Trustees of Indiana University, 2013, with permission

in a Medicare managed care plan or accountable care organization. Table 10.6 outlines the basics of a business case for GRACE including program costs and projected return based on results of the original GRACE trial and GRACE replications. A GRACE program having the staffing (Table 10.6) and other costs and operating at steady state with an active census of 300 high risk patients (caseload of 100 per GRACE Support Team) can expect an approximate intervention cost of $175 per patient per month, or $2,100 per patient per year (total annual program staffing and mileage costs of $630,000). Assuming a baseline hospitalization rate of 1,200 per 1,000 per year and $10,000 in cost savings per hospitalization avoided, a 30 % reduction in hospitalization rate will save 108 hospital admissions or $1,080,000. Additional costs are likely to occur associated with the GRACE intervention including an increase in expenses for mental health and physical and occupational therapies, however, additional savings are likely too (e.g., avoided ED visits). Furthermore, there are several less quantifiable benefits of GRACE Team Care that help make the business case and demonstrate added value (Table 10.7).

Implementation of GRACE Team Care

ABC's of Implementation

Successful implementation of GRACE Team Care requires a systematic approach to the implementation process. This process includes obtaining leadership support, documentation of processes, and evaluation of results. To aid in following a structured approach, replication sites are encouraged to follow the "ABC's of Implementation" [13] (Table 10.8). The first step in implementation is to Agree on the need for GRACE. Agreement needs to be obtained from key stakeholders and leadership team members. To help obtain agreement, the goals for GRACE

Table 10.8 ABC's of GRACE Team Care implementation

*A*GREE—Agree on the need for GRACE by key stakeholders
*B*UILD—Build the GRACE model with strong physician leadership and interdisciplinary team approach to planning and development
*C*OMMENCE—Commence GRACE with a focus on patient-centered care and attention to provider issues
*D*OCUMENT—Document implementation of the GRACE model to ensure changes in the process of care take place as planned
*E*VALUATE—Evaluate the program for anticipated benefits to the patients, providers, and healthcare system
*F*EEDBACK—Feedback provided to key stakeholders to update them on the progress of the GRACE program for sustained support
*G*ROW—Grow the GRACE model to serve more older adults

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should achieve a "win" for patients, providers, and the larger healthcare system. During this first step, a GRACE Steering Committee is formed to develop program goals, identify target populations, and determine outcome measures [14].

The next step is to *B*uild the GRACE model with the aid of key physician leaders. During this phase, a GRACE medical director and physician champion are identified. The GRACE implementation team is also assembled composed of the disciplines involved in the day-to-day operations. Training of staff in the GRACE processes occurs during this stage along with customizing GRACE assessment forms and protocols to meet the needs of the individual health system [14].

*C*ommence is the third stage during which enrollment into the program begins. The GRACE team begins to implement the key components of the model including the in-home

assessment and development of individualized care plans. The GRACE interdisciplinary team begins their weekly meetings to review patient care plans [14].

*D*ocumenting GRACE processes are integral to successful implementation. Process metrics should be tracked to ensure changes in the process of care occurred as planned. Documentation related to dates of enrollment, team conferences, and collaboration with primary care physicians is also useful. Monitoring contacts with the patient and continuity of care can provide insight into workloads and complexity of enrolled patients [14].

An important step of implementation is to *E*valuate the model. Evaluation should take into account the anticipated benefits to patient, providers, and the larger health system. During this stage, the Steering Committee should review the evaluation data to determine whether outcome measures were met. Patient and provider satisfaction with the program should be assessed and data regarding care processes, quality metrics, and acute care utilization should be reviewed [14].

After evaluating the data, *F*eedback should be provided to key stakeholders regarding the progress of the program. Through this feedback, support can be gathered for GRACE program sustainability. Feedback should be given routinely to the GRACE Steering Committee and other physician and health system leadership to bolster continued support. Additionally during this stage, focus shifts to the development of a business case for the program [14].

The final stage of implementation is *G*row. As favorable outcomes are achieved and a solid business case developed, the program should warrant expansion to meet the needs of the patient population and healthcare system. Continuous enrollment of new patients is important for long-term sustainability of the GRACE program. During this stage, success of the program should be shared with the larger community through presentations and publications [14].

Barriers and Facilitators to Successful Implementation

Several factors have been identified as being key to successful implementation (Table 10.9). Having a physician champion from the healthcare system who can speak to the program's effectiveness and agree to help with program implementation can be an enormous boost to GRACE implementation. When presenting the program to leadership and key stakeholders, the program should highlight how stakeholders can achieve their goals and priorities. Identifying the "win-win-win" for the health system, providers, and patients is essential to gaining early support. Identifying financial incentives for the health system and providers can also help gather support. The GRACE model is most effective in a system having a strong primary care service and respected geriatrics or senior health clinicians. Having a shared EMR and care management software can also be an important facilitator in program implementation. The ability for the new program to document and integrate care plans within the same EMR as the primary care providers facilitates communication and relationship building. When beginning a new GRACE program, it is optimal to dedicate staff to the new initiative. This avoids staff with already full workloads getting asked to take on additional duties and becoming overwhelmed. It also allows new GRACE staff time to learn and help implement care processes as they increase their caseload. For successful startup, it can be especially valuable to obtain expert training and technical assistance on the GRACE model. Consultative assistance can help with all phases of GRACE implementation including recommendations on program adaptations for the local health system [14].

Table 10.9 Facilitators of successful implementations of GRACE Team Care

• "Early adopter" clinical champion
• Key stakeholders support as win-win-win
• Strong primary care and valued clinical geriatrics
• Financial incentives for system and providers
• Shared EMR and care management software
• Dedicated staff for start-up (not "add on" duties)
• GRACE site visit, training, and technical assistance

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GRACE Training and Resource Center

Through experiences in successfully replicating the GRACE model within a variety of health systems across the country, a series of training and technical assistance services have been identified as helpful in aiding organizations (Table 10.10). These services are now offered through the IU Geriatrics GRACE Training and Resource Center at the Indiana University School of Medicine, Indianapolis, IN. Ideally, implementation assistance is offered over the course of several months. With a longer engagement, technical assistance can be provided for all stages of implementation including organization readiness, training on the model, customizing processes and forms, booster training for staff, business case development, and evaluation support. Providing a mix of telephonic, web-based, and in-person training can assist organizations in reaching several audiences

such as key stakeholders, physician leaders, and implementation team members.

An optimal engagement for training services is 12 months. During this period, webinars are offered to provide an overview of the GRACE model, discuss implementation, and identify specific organizational goals. A site visit to Indianapolis to see "GRACE in action" is also offered. Monthly conference calls provide individualized program support and instruction for implementation and evaluation of the model. An intensive in-person training is geared toward the implementation team members learning the key components of the GRACE model and roles of the GRACE team members, becoming familiar with GRACE assessment forms and care planning processes, and developing strategies for care coordination and transitional care. A follow-up in-person evaluation and sustainability session is offered toward the end of the 12-month period to review data and program evaluations and discuss strategic planning.

A web-based care management software program has been designed for use exclusively by GRACE programs. The software enables the GRACE Support Team to develop an individualized care plan through the selection of GRACE protocols and corresponding team suggestions (Fig. 10.4). The care plan can be downloaded, printed, and shared with the primary care physician and other providers (Fig. 10.5).

Table 10.10 GRACE Training and Resource Center services

• Indianapolis site visit
• Pre-implementation webinars
• Implementation conference calls
• Intensive in-person team training
• GRACE training manual
• GRACE dashboard
• Evaluation and sustainability conference calls
• Evaluation and sustainability session
• GRACE care management tracking system
• On-line tools and resources (Table 10.11)

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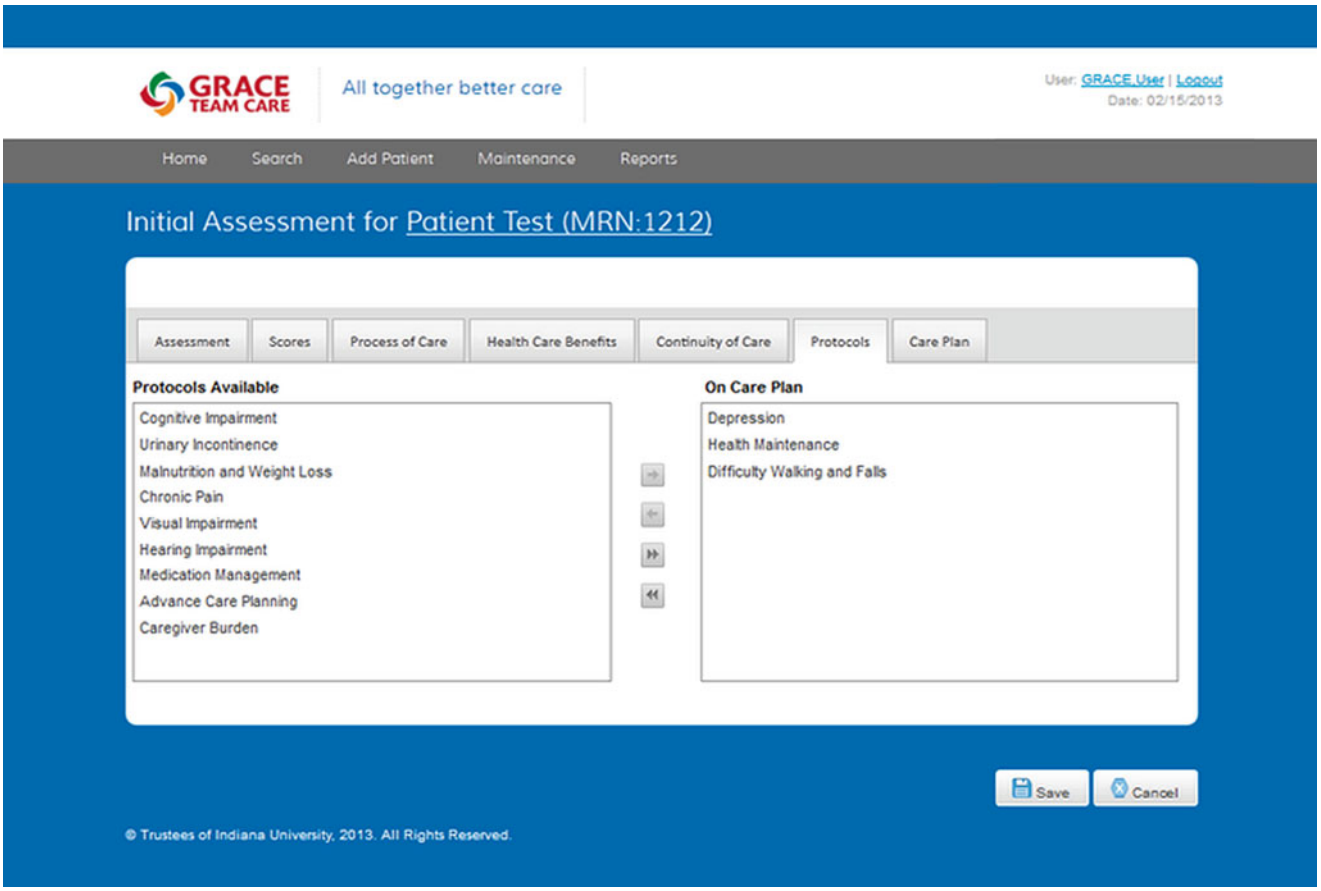
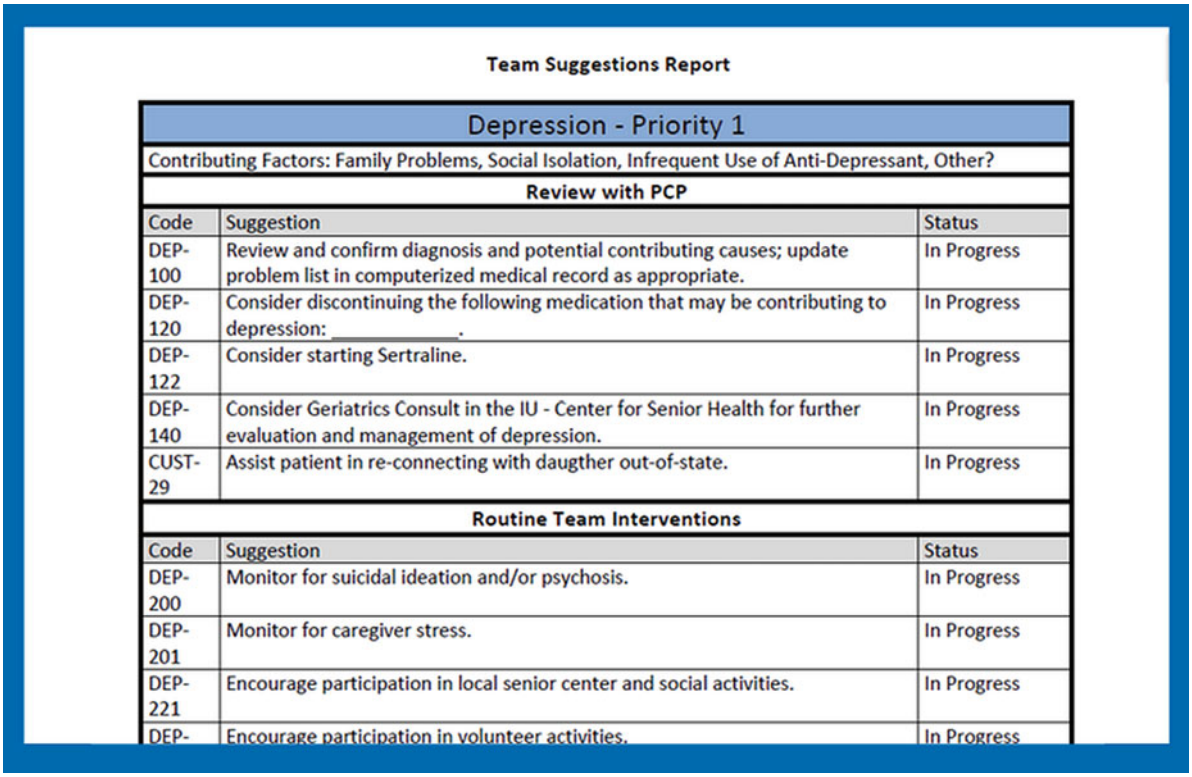


Fig. 10.4 GRACE Team Care management software (From IU Geriatrics GRACE Training and Resource Center, The Trustees of Indiana University, with permission.)



Team Suggestions Report

Depression - Priority 1		
Contributing Factors: Family Problems, Social Isolation, Infrequent Use of Anti-Depressant, Other?		
Review with PCP		
Code	Suggestion	Status
DEP-100	Review and confirm diagnosis and potential contributing causes; update problem list in computerized medical record as appropriate.	In Progress
DEP-120	Consider discontinuing the following medication that may be contributing to depression: _____.	In Progress
DEP-122	Consider starting Sertraline.	In Progress
DEP-140	Consider Geriatrics Consult in the IU - Center for Senior Health for further evaluation and management of depression.	In Progress
CUST-29	Assist patient in re-connecting with daugther out-of-state.	In Progress
Routine Team Interventions		
Code	Suggestion	Status
DEP-200	Monitor for suicidal ideation and/or psychosis.	In Progress
DEP-201	Monitor for caregiver stress.	In Progress
DEP-221	Encourage participation in local senior center and social activities.	In Progress
DEP-	Encourage participation in volunteer activities.	In Progress

Fig. 10.5 GRACE Interdisciplinary Team care plan (From IU Geriatrics GRACE Training and Resource Center, The Trustees of Indiana University, with permission.)

The care plan can also be scanned or uploaded into the health system's EMR. The software offers a platform for the GRACE Support Team to track the implementation of the care plan including noting which interventions are "done," "in progress," "not done-patient disagrees," and "not done-physician disagrees." The ability for the GRACE team to add real-time updates to the care plan allow for the care plan to serve as a living, up-to-date tool rather than a static document. Report functions in the software assist with tracking of care plan review schedules and team member case loads.

Having the ability to connect with GRACE trainers and access tools and forms has proven to be a valuable resource to GRACE team members during program implementation. Through the GRACE Team Care website (http://graceteam-care.indiana.edu), training participants can access the Member Forum (Fig. 10.6). The Member Forum provides participants with access to a host of tools and resources including job descriptions, implementation checklists, enrollment criteria, GRACE protocols, assessment forms, and business case materials (Table 10.11). Additionally, the Member Forum features an "Ask A Question" portal where participants can submit questions to GRACE trainers via an online bulletin board. Providing a range of training and technical assistance offerings that can be customized for each organization enable replication partners to successfully implement the GRACE model while achieving "all together better care."

Fig 10.6 GRACE Team Care website home page (From GRACE Team Care [homepage on the Internet]. The Trustees of Indiana University; 2013 [updated 2015, January 12th]. Available from: http://graceteamcare.indiana.edu., with permission.)

Table 10.11 GRACE Training and Resource Center on-line tools

• Guidelines for steering committee and implementation teams
• GRACE team member job descriptions
• Implementation checklist
• Enrollment criteria (high-risk and transition)
• GRACE training manual
• Assessment forms
• GRACE protocols
• Primary care physician introduction materials
• GRACE business case guide
• Simple business case tool
• Professional development resources

From GRACE Team Care [homepage on the Internet]. The Trustees of Indiana University; 2013 [updated 2015, January 12th]. Available from: http://graceteamcare.indiana.edu, with permission

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