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As individuals age, debility from the accumulation of illness combined with the age-related loss of physiological reserve leads to increasing functional decline and resultant disability. While aging cannot be reversed, and most chronic illnesses cannot be cured, a pragmatic approach based on health and function can improve the quality of life of the older person. This approach—comprehensive geriatric assessment (CGA)—is a multidimensional, usually interdisciplinary, diagnostic process designed to determine a frail elderly person's medical, psychosocial and functional capabilities and problems with the intention of developing an overall plan for treatment and long-term follow-up [1]. Teams that provide CGA and then perform the management (e.g., interdisciplinary primary care) derived from that evaluation are often termed geriatric evaluation and management (GEM) teams. The terms are often used interchangeably in practice, and in this chapter we will use both, CGA being the more general term. CGA has been implemented most frequently by interdisciplinary professional teams in various settings, and targeted at older patients with complex medical conditions and need for caregiver support. This chapter will specifically detail team-based CGA/GEM in the outpatient setting.

CGA is central to the practice of geriatricians (and those in training) and is predicated on the idea that a thorough and systematic evaluation of problems in an older frail person will lead to better quality of life and better outcomes. In the treatment of older individuals with complex problems, CGA remains a useful means of guiding care.

The differences between CGA and a good history and physical are important to detail. A thorough history and

physical by a trained provider is aimed at discovery, prevention, and treatment of medical problems. The assumption behind the full medical evaluation is that improving the care of the medical conditions of the patient will thus improve or maintain patient physical functioning and quality of life. For the healthy and well-functioning patient, this assumption remains valid. For the old-old and/or frail individual, with multi-morbidity and geriatric syndromes, this assumption does not apply. Due to their nonspecific symptoms, many of the geriatric syndromes may not be obvious during a routine medical history and physical. In contrast, CGA places a major focus on the functioning (psychosocial and physical) of the individual, identifying issues that may be paramount but are not necessarily medically based. Difficulties with activities of daily living (ADLs) and instrumental activities of daily living (IADLs) in older individuals may stem from other than medical problems: cognitive decline, poor social supports, medication non-adherence, polypharmacy, and comorbid conditions among others. Focusing on the functioning difficulties will uncover these issues and open avenues for their treatment.

A common example is an 85-year widower with degenerative arthritis (DJD) of the knee. Medically this is straight forward, with treatment focusing on pain control and exercise, often with eventual knee replacement. In both young and healthy old patients, this is likely all that is necessary to provide optimum care. Focusing on function, a CGA is performed by a team of geriatric specialists, in this case a nurse, a geriatrician and a social worker. The evaluation determines that the knee arthritis may be contributing to social isolation, with resultant decreased food intake and a reactive depression from being housebound. Urinary frequency with occasional urinary incontinence (due to the inability to reach the bathroom in time due to knee pain) also contributes to the social isolation. Each of these issues will need to be addressed to improve the quality of life of the patient. Given that DJD is not easily controlled with medical interventions, addressing the social isolation may be the most important part of the intervention. Many of these issues will not be obvious on

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routine examination and will not be brought up as difficulties unless sought after.

Who Should Be Referred for CGA?

Given the intensity of the evaluation, CGA is targeted toward those most likely to benefit. The frail elderly are the most likely population to be helped by CGA (Table 16.1). Targeting criteria other than age include functional status, presence of geriatric syndromes, social isolation, mood disorders, chronic disease burden, and/or those at risk for transitioning to a higher level of care.

Those who are too young and too healthy and who are functioning well in their environment are not as likely to benefit. Conversely, those who are too sick and too disabled may not benefit substantially either, especially where there is minimal room for improvement. This would include those requiring long-term nursing home care due to dependence, those with terminal illness, or those with severe dementia. While generally aimed at the older individual (geriatric age), the definition of “older” is generally qualified by several factors. Older to a teenager is anyone over 30, for most it is any over the retirement age. For CGA, old generally focuses on those above 80 because the prevalence of age-related conditions is highest.

Table 16.1 Who will benefit from Comprehensive Geriatric Assessment?

Community living patients > 65 likely to benefit from Comprehensive Geriatric Assessment

Functional loss
ADL decline (bathing, dressing, toileting, transfer, feeding, continence)
IADLs loss (cooking, cleaning, shopping, finances, medications, telephone, driving)
Geriatric syndromes
Cognitive decline (dementia/delirium)
Falls
Incontinence
Frailty
Polypharmacy
Weight loss
Depression
Chronic debilitating disease
CHF
Dementia
Parkinson disease
COPD
Transitioning to a different level of care
Community living to assisted living
Assisted living to long term care
Nursing home to community living
Caregiver stress
Frequent admissions to the hospital
New diagnosis of cancer before chemotherapy
Preoperatively prior to major surgery
Community living patients > 65 unlikely to benefit from CGA
Too well
Fully functional with no geriatric syndromes
Independent in ADLs/IADLs
Cognitively intact
Good social supports
Too impaired
Dependent in ADLs and requiring full-time care
Severe dementia
Those already in long-term care

Function

Under normal conditions, older individuals should be able to maintain their independence in the community with minimal assistance. If difficulties arise, then a close investigation of why should ensue. For evaluation purposes, independence is quantified using an activities of daily living (ADL) instrument [such as the Katz ADLs scale that includes bathing, dressing, toileting, transferring, feeding and continence] [2]; and an instrumental activities of daily living (IADL) measure [such as the Lawton IADL scale that included cooking, cleaning, driving, finances, shopping, taking medications, and telephoning [3]]. Change in ability to live independently should trigger an investigation into the causes, with the goal to reverse or ameliorate the debility through medical, functional, or social means.

Geriatric Syndromes

These syndromes interfere with function and impact caregivers and patients alike. Often the causes are multifactorial and irreversible requiring a multifaceted approach to treatment. The geriatric syndromes that tend to most benefit from the multifaceted investigation include dementia, delirium, depression, falls, gait difficulties, weight loss, incontinence, and frailty.

Chronic Illness

In older individuals with severe or multiple chronic illness, the ability to self-manage these illnesses may be impaired and lead to an overall loss of function. The multifaceted evaluation of CGA can identify ways to reduce the burden. This can be especially useful in those with multiple hospital admissions, given that the reason for readmissions often is the interaction between the illness and the individual's ability to manage it in their home environment.

Specialty Uses of CGA

CGA has proven useful in caring for older adults in several other specialty settings. For example, CGA is useful in oncology—increased life expectancy has led to an increased number of older individuals with cancer, with a need for appropriate disease- and age-specific management. The CGA can estimate the impact of cancer and chemotherapy on the psychosocial functioning of the patient, help with chemotherapy decisions [4], and determine whether there is underlying cognitive impairment or geriatric syndromes which are likely to be exacerbated during the treatment phase or impact prognosis.

Preoperative CGA has been more recently used for much the same reasons as in oncology to better predict postoperative complications and issues which may complicate recovery [5, 6]. Specialized geriatric orthopedic services have demonstrated improved outcomes over traditional care for older patients with hip fracture or those undergoing joint replacement. Other areas trialing CGA include patients before dialysis and those with congestive heart failure.

When to Refer the Patient for CGA

Many of the functional problems and geriatric syndromes noted may not be evident in routine office practice. However, simple screening assessments can be performed by primary care providers. Many tools exist for screening cognition, function, mood, geriatric syndromes, and social supports. Simple screens in office-based practices could include short cognitive screens [e.g., Mini-cog [7], Montreal Cognitive Assessment (MOCA) [8]], Mini-mental State Evaluation (MMSE) [9], depression screens [e.g., PHQ-2 and 9 [10], GDS short form [11]], gait/balance screens [e.g., measured gait speed, Tinetti's Performance Oriented Mobility Assessment (POMA) [12], or the Timed Up-and-Go test [13]], fall risk [e.g., history of falls, CDC STEADI instruments [14]]. Older patients who screen positive with these tools could be considered appropriate referrals to a team for CGA.

The Model of CGA

The health care needs of an older individual are often complex, and any successful treatment will require more than medical management of disease. The evaluation of multiple domains of health may be necessary, including medical, physical function, cognition, mood, social, and financial. CGA uses a systematic evaluation by an interdisciplinary team of health professionals to identify treatable health problems, thereby leading to better health outcomes.

Interdisciplinary Team

For a frail older person, the ability to follow and or carry through a medical plan of care, however well thought out, may be impossible due to functional and psychological circumstances. Travel issues, financial issues, caregiver issues, personal mobility issues, cognitive issues all may render good medical care ineffective. A team of geriatric providers with areas of expertise in these areas is invaluable for the assessment of these issues. Each team member evaluates and develops a plan to overcome or at least address the barriers/

health issues of the patient. The plans are then discussed and combined for the overall plan for the patient.

For the purpose of CGA, it is useful to distinguish between multidisciplinary and interdisciplinary teams. Multidisciplinary teams bring together members with diverse training with the purpose of sharing information, and this can often be done by meetings, through chart notes (greatly aided by electronic records) or individual or group communication. Interdisciplinary teams are similarly skilled but are focused on a group process for problem solving, which requires team interaction and derivation of a group assessment which incorporates the individual assessments and plans. In-person (or virtual) meetings are necessary for the problem solving function of this team. Although either model works well, for complex older patients the interdisciplinary meeting will derive more thorough patient-centered plans.

Therefore, a key feature of the CGA model is the interdisciplinary team meeting. Traditionally done in person, evaluations are presented and an overall plan of care is arrived at, incorporating medical, social, psychological and functional plans of care. The team is often led by the geriatrician. The value of the in-person meeting of all members is to ensure that social, psychological and functional aspects of care are not overlooked, as these may be key to improving the patient's quality of life. In a multidisciplinary model, the medical evaluation might overshadow the psychosocial aspects, since the physician is often the point of contact person for the patient evaluation and follow-up. Problems encountered that are psychosocial in nature might be overlooked.

The core assessment team generally consists of nursing, social worker and geriatrician, but may include other members depending on the population being served. Many teams include other members depending on the patients served and the setting: psychologists, occupational or physical therapist, pharmacist (or PharmD), and nutritionist (Table 16.2). These members may see all patients or are brought in depending on the need.

The outcome of the CGA is a written care plan, which lists and addresses all problems (functional, medical, psychosocial), action plans for interventions and future care, including resources such as the need for support services, and further evaluation and/or follow-up. This plan includes a summary plan of care as well as the recommendations of the team members. This document should serve as a guide for the providers caring for the patient as well as for the patient and their family/caregivers. Patient and family caregiver involvement is vital to the success of many of the interventions, and it is recommended that they are engaged throughout the process. In many practices, it is ideal to perform a team meeting with the family and patient to review the complete plan.

CGA programs exist both as a consultant team to primary care and also as a bridge to geriatric primary care practice. In the consultative model, the patient is referred back to their primary care providers to complete the plan. For the GEM model, the CGA team generally performs the majority of the recommendations, as many of the plans generated are not fully implemented after referral back to primary care. The team plan should detail responsibilities for follow through on individual items. The success of implementation of the plans should be monitored, with modification of the plan to ensure that problems identified are adequately addressed. This monitoring can be carried out by a team member using phone follow-up with the patient and or family caregiver, and/or reassessed on follow-up visits.

Roles of the Team Members

Many of the roles of the team members overlap, and experienced teams find that streamlining evaluations to avoid duplication is necessary for smooth functioning, and often teams will distribute screening tools on the basis of skills, needs or time for evaluation. Prescreening can often improve the efficiency of the evaluation since known resources can be gathered beforehand. Many geriatricians feel that they can perform the CGA without team members, given their training in functional assessment, knowledge of social services, ability to perform cognitive evaluation, and polypharmacy assessments. However, geriatricians working with teams usually attest to increased efficiency through utilization of team member's multiple skill sets and benefit as well through increased opportunity to communicate during the CGA. The broad range of skills and experience of the team will cast a wide "net," evaluating functional deficits and developing fruitful avenues for improvement.

Geriatrician

A geriatrician is often the center of an interdisciplinary team, if not always the leader. Geriatricians are trained in internal medicine or family practice with fellowship training in geriatrics, giving them skill in the evaluation and treatment of the ailments of the frail elderly. Geriatrician evaluations will focus on diagnosed and undiagnosed problems, pain, medications (medication reconciliation, age appropriateness), and age-related syndromes. The key evaluations include medical diagnostics, medication review (the "brown bag of medications"—customarily patients are asked to bring in all the medications they have, including over-the-counter medications, in a bag), and integration of the medical plan with the other members of the team.

Table 16.2 Roles of the members of the interdisciplinary team

Team member	Evaluations
Geriatrician	Thorough medical evaluation/development of problem list Differential diagnosis of functional impairments Evaluation of geriatric syndromes: Falls, incontinence, frailty, cognitive impairment, etc. Medication review/reconciliation Integration of medical plan with other team members
Nurse	ADLs IADLs Common screening instruments: Frailty, falls, cognitive, depression etc. Caregiver stress
Social work	Social connectedness Informal supports/availability of help Caregiver stress Community resources Financial evaluation
Psychology	Cognitive evaluation and diagnosis Mood/anxiety screening and treatment
PharmD	Medication review and education
Nutrition	Dietary history Evaluate access to nutritional foods Medical diet recommendations
Physical therapy/occupational therapy	Fall/gait evaluation and treatment ADL/IADL recommendations

Nurse

The nurse in the geriatric assessment team frequently brings advanced training in gerontology, and often a wealth of experience. The key elements of the RN evaluation consist of the functional evaluation of the frail elder. What can they do for themselves and what do they need help with? Can they get through a single day without help—basic ADLs; can they get through a week without help: IADLs. Other major evaluations include the determination of who is providing help during the week, a complete compilation of medications (assembling the brown bag of medications for MD/PharmD review), and often psychological/cognitive screening (e.g., MOCA, MMSE or Mini-cog, GDS, PHQ). Allergies, alcohol use, smoking, and “illicits” are often determined during the nursing screening.

Social Work

Social workers typically have a master’s degree in social work with training in gerontology. They perform a key aspect of the evaluation—determination of the social connectedness of the patient, reviewing what professional and nonprofessional help they are receiving. Home assessments are invaluable, but the in-office assessment can often

substitute and give a picture of how the patient is functioning in their environment. Recommendations for available services based on need and location are vital pieces of assessment recommendations. Often the “how” of the CGA recommendations falls squarely on the creativity and skill of the social worker.

Psychology

Gero-psychologists can be a valuable member of the CGA team, although given their rarity, they are often not present. Gero-psychologists have an advanced degree in psychology and have typically done a clinical fellowship in gero-psychology. Their expertise is in the diagnosis and treatment of disorders in the elderly, most frequently depression, dementia, and anxiety disorders. Neuropsychologists can fulfill this role as well, although their greatest utility is in diagnostics based on detailed neuropsychological testing. Most often, gero-psychologists and neuropsychologists serve a consultative role for patients with unusual or difficult to diagnose cognitive/psychosocial disorders. Determination of capacity is an often overlooked but vital function for the care of elders with poor social supports in need of more stable living conditions. The psychologist role is to evaluate cognitive/psychological disorders, and in the team meetings

will often discuss probable diagnosis and recommend necessary further evaluations/treatments to clarify diagnosis.

Pharmacy

PharmDs with training in geriatrics often function in a consultative role in the CGA. In instances where polypharmacy is a major issue, the PharmD evaluation of the medical regimen for indications and interactions can be invaluable.

Nutrition

Licensed dietitians with gerontological experience or training can bring great expertise to bear on patients' problems, and when available are active members of the assessment team. The problem of under-nutrition is frequent in the frail elderly and has myriad causes, including medical, social, cognitive, psychological factors. Nutritional evaluations are time-consuming and recommendations need to be tempered by the medical social and psychological needs of the patients. Additionally, medical diets such as for diabetes need to be adapted to the patient and their unique situation.

Physical/Occupational Therapy

Therapists are often available for consultation in the outpatient setting and can be invaluable for physical performance evaluations, gait training, prescription of assistive devices for ambulation and ADL assistance. Sometimes, geriatricians and therapists collaborate in dedicated falls and balance clinics that provide specialized gait training and fall prevention interventions.

Goal of CGA

The evaluation of the patient is multidimensional, examining medical, psychosocial, and functional problems/strengths of the patient. The goal is to develop a comprehensive plan to improve quality of life and maximize function. Patient-centered goals will be important in order to determine the direction of the care plan and the patient's goals of care, including advance directives and end of life wishes. The evaluation that flows from these goals therefore takes a predictable and logical direction: determination of functional status, current medical illnesses and their functional impact, polypharmacy/medication review, gait and balance assessment, fall risks, cognitive status, evaluation of mood, frailty assessment, social supports/social network, nutritional status, vision/hearing screening, goals of care (Table 16.3).

Functional status is quantified by examining the ability to perform those activities that enable independent living at home: the ADLs and IADLs. As a focal point for evaluation, the determination of the ability/inability to perform these activities is fundamental to developing a patient-centered plan. Acute and chronic physical illnesses frequently impair ADLs and IADLs, and helping the patient adapt will greatly improve quality of life. Patients with cognitive impairment will have difficulty with IADLs, especially finances and medication adherence. Functional evaluation serves as a practical point of entry for problem solving to improve quality of life. A memorable patient of one of the authors was a 91-year-old man with severe congestive cardiomyopathy who had dyspnea on minimal exertion. Although he was admitted frequently with fluid overload, he claimed adherence to his medications, constantly adapting dosing of diuretics to his weight. Among other things, CGA determined that he was having increasing difficulty with bathing and dressing, and food shopping was getting too difficult. The social worker implemented a home health service for 2 h on 2 days/week to maintain home cleanliness and perform shopping chores. Within 2 months he had shed most of his extra fluid, achieved a stable dose of diuretics, and was not admitted for the next 2 years. In retrospect, he admitted that he was getting over-fatigued with household chores and was too fatigued to shop for appropriate food. The home health aide allowed him to use his limited energy to eat better food—leading to a better outcome. GEM teams have the advantage of following change in function over time as reassessments are made during ongoing care. This change in function over time can be used to evaluate response to interventions, and develop long-term plans of care.

Current Medical Illness and Functional Impact

The evaluation and treatment of underlying disease is an important aspect of the medical part of the geriatric evaluation. With age, disease burden often increases. CGA thoroughly evaluates the disease burden of the patient, reevaluates present treatment and ensures that progressive and impairments are addressed.

Polypharmacy/Medication Review

Although time-consuming, a thorough medication review is an important feature of the CGA. Patients accumulate large numbers of medications, many outdated and un-discarded. It is important that all medications, both prescribed and over-the-counter, be brought in for evaluation. A medication review will often uncover errors in self-administration, and use of medications that should be used cautiously in the older

Table 16.3 Domains of evaluation and screening tools for geriatric assessment

Domain	Purpose	Useful scales
Function: activities of daily living	Ability to maintain self for a day without outside help	Katz ADL [2]
Function: instrumental activities of daily living	Ability to maintain self for a week without help	IADL [3]
Social	Availability of help, informal (including family) and professional Social connectedness	Lubben Social Network Scale [15] Older Americans Resources and Services, Social Resources Section [16]
Gait and balance	Evaluate mobility and risk for falls	Tinetti's Performance Oriented Mobility Assessment (POMA) [12] Timed Up-and-Go Test [13] CDC STEADI instruments [14]
Cognition	Evaluate cognitive function	Mini-mental State Evaluation (MMSE) [9] Mini-cog [7] Montreal Cognitive Assessment (MOCA) [8]
Mood/anxiety	Evaluate for depression anxiety disorders	Geriatric Depression Scale [17, 18] PHQ-2 and 9 [10] GDS short form [11]
Nutrition	Adequate nutritional access/intake	Nutrition Screening Initiative Checklist [19] Mini Nutritional Assessment [20]

patient due to age or age disease interactions [21]. Polypharmacy evaluation is a term frequently invoked for this process, and while the term polypharmacy means too many medications, operationally it means an inappropriate medication regimen. Appropriateness of the regimen is determined by matching medications to diagnosed disease, evaluation of regimen for potential interactions, including age and disease-based interactions, and under- and/or overtreatment of disease. In complex cases of polypharmacy, the inclusion of a PharmD on the interdisciplinary team is invaluable.

Gait and Balance Assessment

Gait can be a key factor for functional independence and gait speed is predictive of future disability and mortality [22, 23]. Gait and balance assessment can reveal risk for falls and can trigger referral for physical therapy for gait safety and falls evaluation. Various scales have been used, from the Timed Up and Go (TUG), to the more extensive Tinetti POMA scale [12].

Fall Risk

Fall risk assessment incorporates gait and balance, but other important features include visual and hearing acuity, determination of sitting and standing blood pressure, and medications [24]. The prevalence of orthostatic hypotension is high among older individuals, leads to an increase risk of falling,

and is affected by diet and medications. It is often silent, so direct determination will help guide care.

Cognitive Status/Mood

Direct screening for cognition/mood status is recommended given the prevalence of cognitive and mood disorders older age and the tendency to cover them up. Cognitive impairment is frequently unrecognized by providers [25], thus formal cognitive screening is recommended with follow-up diagnostic assessments for those with evidence of neurocognitive impairment. Patients may retain independent functioning with early dementia by use of adaptation of their habits, reliance on external memory aids, family supports, etc. Many will not admit to increasing difficulties for fear of diagnosis, fear of loss of function, removal from home, or loss of driving privileges. Implementation of the CGA plans must be tempered by the cognitive capabilities of the patient and their caregiver.

Advance Directives/End of Life Decisions

With family present, discussion of advance directives and end of life decisions can be discussed. Optimally, this discussion can occur during the initial evaluation, but due to time constraints may be delayed for a follow-up discussion. The written CGA plan of care should incorporate these as indicated.

Effectiveness of Outpatient CGA/GEM

Research on models of care has given mixed evidence of the efficacy of CGA in the outpatient setting. While many early studies suggested efficacy of the CGA in the outpatient arena, later studies were more neutral. Comparison of studies of CGA is made difficult by the use of slightly different models and targeted patients, and the degree to which the interventions were implemented. Studies of GEMs, e.g., where the CGA team both craft and carry out the interventions, tend to show better outcomes than programs that only make assessments and then give recommendations to other providers to implement [26]. A randomized clinical trial of GEM in a community hospital showed less functional loss, less health-related restriction in activity, and less depression than controls [27]. There was no difference in health care utilization or Medicare costs. In a large systematic review of the evidence [28], there was a slight reduction in nursing home admissions, improved physical function, lower risk of hospital admissions, and no change in mortality. A large randomized trial in the Department of Veterans Affairs (VA) found that outpatient GEM (with 1 year of ongoing care) was associated with better medication management, fewer adverse drug effects, and more appropriate therapy for identified conditions [29].

Financial Considerations

CGA represents a significant investment of time and effort of multiple professionals to create an informed plan for an individual patient. Medicare fee for service does not reimburse all team members, and team meetings are generally not covered. Therefore, most CGA programs exist under the auspices of hospital systems where the increased cost of the full team is absorbed on the premise that the coordination of the care saves costs elsewhere.

There are many positive effects of CGA or GEM for hospital systems. While hospitals frequently boast about the high quality and comprehensive care offered by CGA geriatric services, there are other real benefits to the hospital systems. The CGA program as part of a hospital outpatient system serves as a focus for the referral of frail older individuals who will need a spectrum of services. These patients tend to be high utilizers and the presence of a CGA or GEM program allows focused management and care coordination. CGA programs also serve as excellent training sites for geriatric personnel, from medical students, residents, trainees, social worker students and professionals, nurse, nurse practitioners, psychologists, etc. Referrals from geriatric services tend to be high and these patients remain active in the

hospital system. As Medicare payments shift to reimbursement based on quality and less on episodic care/admissions for care, these teams can be a focus for quality and improvement of post hospital care for complex patients. Other areas of focus that benefit the hospital system include coordination of care for difficult patients with community services such as Adult Protective Services.

The use of the electronic medical record enhances the utility of the geriatric assessment implementation. Once in the electronic chart, the team assessment and plan is available to all providers coming into contact with the patient. It will save on redundant evaluations, serve as a record of the medication review, and document the functional status and social supports, all of which can aid in other sites of care. For example, hospital discharge plans can be more precise, e.g., the admitting/discharging cardiologist will get a clear picture of the functioning of the patient with CHF prior to the admission, and a clear idea of all the medications that are being used including OTC, and the interventions to assure adherence to medications and diet. The referral to home care will have a clearer idea of the goals of the functional interventions and support. Other outpatient providers consulting on chronic disease will likewise have detail on the functioning of patient to make better informed therapeutic decisions.

As the Affordable Care Act shifts away from Medicare fee-for-service toward value/quality-based reimbursement, the potential value of CGA programs will grow. The focus on improving quality of life, function, and appropriate medication/medical care will maintain their importance. As cost containment measures increase, the coordination of care that can be provided will serve to maintain quality of care in the vulnerable aging population.

The largest healthcare system in the country, the VA, has supported GEM both for inpatient and outpatient care. Within this large capitated payment system, the GEM programs have thrived. The multi-site GEM study by Cohen and colleagues evaluated both inpatient and outpatient GEMs, and concluded that there were improvements in mental health for the outpatient GEM patients at 1 year without an increase in cost to the system [30]. Serious adverse drug events were reduced by 35 % by the outpatient GEMs compared to usual care [29] with overall improvement in drug regimens. The GEMs have served as sites for quality improvement, clinical trials, and clinical demonstrations for testing of novel programs of care for older veterans. The GEM programs in the VA are often the focus of academic geriatric sections, and have served as invaluable training sites for geriatrics. As a testament to their training value, they have trained many of the practicing geriatricians in the USA today, as well as many medical students, medicine and family practice residents, psychologists, nutritionists, and PharmDs.

Conclusion

CGA/GEM is a widely used model of assessment and care of frail older individuals. It addresses the complex interplay of health, disease, loss of physiological reserve with age, and function through systematic evaluation and treatment by an interdisciplinary team of geriatric experts. While developed for frail elderly, it is being adapted for specialty populations, especially for cancer, orthopedic and preoperative patients, and also is being trialed for patients approaching dialysis, and patients with chronic respiratory or cardiac disease. CGA/GEM has been widely adopted as a model of care in the United States, and CGA programs remain a major site of training in geriatrics.

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