The Acute Care for Elders Consult Program

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Acute Care for Elders: Background and Introduction

Older adults, the fastest growing segment of the United States (US) population, often suffer from multiple chronic diseases and are more prone to acute illnesses. They also account for a disproportionately high number of acute care admissions and hospital days. While older adults aged 65 and older constitute only about 15 % of the total US population, they currently account for about 43 % of inpatient hospital days and are responsible for more than 50 % of total hospital expenditures. The US Census Bureau predicts that we will continue to witness a tremendous growth in our population of older adults over the next several decades, so that by 2050 the number of Americans aged 65 and older is projected to be 88.5 million, more than double the population of 40.2 million reported in 2010. Hence, this particular population plays a vitally important role in the fiscal outcomes for individual acute care hospitals as well as for our entire national healthcare climate [1].

Older adults are particularly vulnerable to adverse events during and immediately following hospitalization for acute medical problems, including pressure ulcers, falls, hospital-acquired infections, functional decline, institutionalization, and early readmission to the hospital after discharge. Furthermore, for many elderly hospitalized patients who often have multiple chronic comorbid conditions and geriatric syndromes, the period of time following hospitalization can be hallmarked by an overwhelming flurry of often confusing changes for the patient, their caregiver(s), and all of their healthcare providers involved across the care continuum. A widely utilized measure of hospitals' successful care transitions for patients is the 30-day readmission rate. A study of 2004 Medicare claims data revealed that nearly 20 % of discharged beneficiaries were rehospitalized within 30 days; 34 % were rehospitalized within 90 days. Half of patients discharged back to the community and rehospitalized within 30 days lacked a documented follow-up visit with their primary care physician (PCP) prior to rehospitalization. The authors estimated that the cost to Medicare for these unplanned readmissions in 2004 was $17.4 billion [2]. To help address these and many other challenges of caring for older adults in acute care settings, geriatric consultative services have gradually evolved over the past two decades as a resource for busy clinicians spanning the various medical specialties in order to better manage the patients they have admitted.

Such geriatric consult services historically have aimed to assist in the care of elders hospitalized in various inpatient sites throughout the hospital, spanning medical, surgical and other specialty units. As an example, geriatric consultative services might be considered when an elderly patient with known dementia is admitted to the hospital after falling and sustaining a hip fracture. The geriatric consultant in this case would be called by the orthopedic and/or possibly the anesthesia team for evaluation prior to or immediately following surgery to assist with managing pain, potential postoperative delirium, and helping with identifying potential needs at the time of discharge such as rehabilitation plans. Other possible scenarios might include the elderly patient in the Cardiac Intensive Care Unit who has developed confusion after suffering a myocardial event, or assisting in the management of a patient admitted on the medicine service for weight loss,

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anorexia, and inability to care for self, whereby the geriatrics consult team is called in to assist with assessment, identification of underlying reasons leading to the presenting findings, and helping to address specific goals of care along with an individualized care plan. All three of the above scenarios present significantly different needs of the patients and also of the consulting providers, and yet in all cases the geriatrician can help guide the clinician who may have little education on the management of older adults, ultimately helping to provide care that is both appropriate and sensitive to older adult patients' needs, while making care safer and more effective.

Acute Care for Elders (ACE), also initially described as "the ACE Unit," is a direct outgrowth of the maturation of the prototypical inpatient geriatrics consult service. A patient-centered model of care tailored to promote independent function and ease the return to home while preventing functional decline, ACE is an evidence-based systematic process of patient care, serving to improve the management of acutely ill hospitalized older adults while avoiding unnecessary procedures and medications which might have detrimental outcomes in the older person [3]. ACE was specifically designed at the outset to address the unique needs of acutely ill elders from the moment of admission to the hospital. This concept has been integrated into a physical unit, "the ACE Unit," in many hospitals across the nation, and has been seen as a sentinel step for improving the care of older adults. The archetypal ACE Unit was a specific medical-surgical ward in the hospital specifically selected, where an interdisciplinary team of geriatrics-trained professionals transformed the environment with modifications designed with the unique needs of elderly patients in mind [3]. For instance, the physical environment of the ACE Unit was designed with special flooring, lighting, and noise control to maximize patient independence while avoiding iatrogenic complications such as delirium and falls. The entire atmosphere was designed to allay the often disorienting and depersonalizing hospital environment to promote a more home-like experience, from geometric carpeting to decrease noise, enhance distance perception and encourage ambulation, to the careful placement of calendars and clocks to promote orientation. Everything from the walls and ceilings to the lighting and furniture was carefully selected with the older adult in mind, recognizing the prevalence of sensory impairment in this population. Care on the ACE Unit was designed to be highly patient-centered, with nursing-implemented protocols promoting self-care; recognition of physical, cognitive, and psychosocial functional needs early on; and implementation of comprehensive discharge planning utilizing vigilant daily medical care review that begins right from the day of admission. Over the last two decades the concept of the ACE Unit has taken on many shapes and sizes, morphing and accommodating to fit the unique needs and environment of every type of inpatient acute hospital setting. As such, the concept of "ACE" has expanded beyond that of a dedicated, physical unit, to now involve the use of "virtual" and/or "mobile" consult teams that still address those very same core nursing-based principles of the original ACE Unit, but often in a very different environment that no longer is limited by the walls of a unit, and as described below, may not even exist within the confines of a single structure at all, as in the case of "ACE Tracker" and other completely electronic database-designed ACE teams that are improving the care of hospitalized older adults often with many miles separating the patient and the actual team. From here on out, the term "ACE" will be used in reference to *all formats* of the ACE Model, not just the prototypical ACE Unit, unless otherwise specified.

The Dysfunctional Syndrome, the ACE Prehabilitation Model, and the ACE Interdisciplinary Team

Despite appropriate treatment for the acute illness necessitating hospitalization, older adults are vulnerable to developing significant hospital acquired disability which includes delirium, depression, pressure ulcers, falls, and generalized functional decline, all of which can have both immediate but most importantly long-term consequences including nursing home placement, permanent functional impairment, and increased mortality. These untoward outcomes ultimately lead to increased cost to the patient, the family/caregivers, and our society. For instance, about one-third of elderly adults who survive hospital discharge on a medicine service will die in the year following discharge [4], and the same proportion of older adults will experience a decline in baseline function at discharge that will continue indefinitely, leading to one in five developing a new disability in the year following discharge [5]. Hence, although functional outcomes are typically not the focus of care during hospitalization, in the end especially for older adults they are often critical determinants of the quality of life, physical independence, cost of care, and prognosis. This hospital-acquired functional decline was initially conceptualized as "The Dysfunctional Syndrome," from which the multi-component ACE concept developed to address these adverse events by combining the principles of geriatric assessment with quality improvement to achieve better outcomes in older hospitalized adults [6].

The theoretical model of "The Dysfunctional Syndrome" relates to the often hostile environment in which an older patient may find oneself when admitted to the hospital: a functional older person enters the hospital with an acute illness, whereby cluttered hallways and tethers such as intravenous lines and cardiac telemetry wires discourage independent ambulation; poorly timed procedures and team rounds lead to sleep deprivation and even malnutrition from

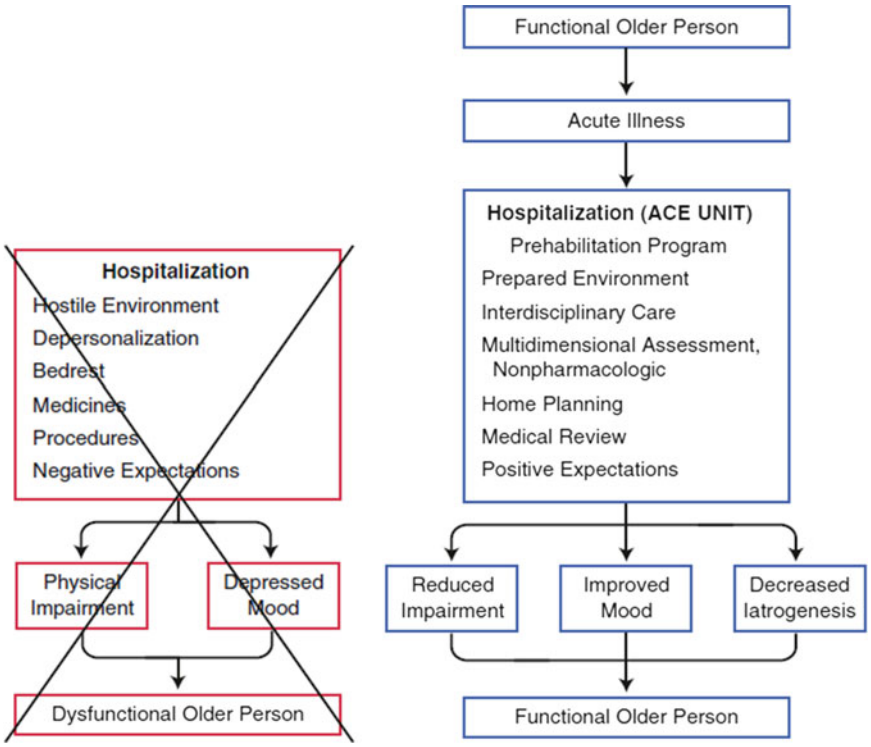

Fig. 3.1 Conceptual model for how ACE can prevent hospitalization-associated disability (From Pierluissi E, Francis DC, Covinsky KE. Patient and hospital factors that lead to adverse outcomes in hospitalized elders. In: Malone M, Capezuti E, Palmer RM, editors. Acute care for elders—a model for interdisciplinary care. New York, NY: Springer Science and Business Media; 2014:21-47 with permission.)

missing meals and prolonged NPO status; medications that are prescribed in inappropriate doses lead to serious adverse events such as delirium, falls, and further debility, all of which combine and lead to a dysfunctional adult at discharge who is unable to directly return to independent living. This further leads to depressed mood, negative expectations, and poor functional as well as deleterious medical outcomes. The ACE concept strives to prevent this detrimental cascade through the presence of a physical climate offering a "prehabilitation" program of patient-centered care fostering multidimensional assessment and careful medication reconciliation utilizing an interdisciplinary team linked with early discharge planning, whereby iatrogenic dysfunction is diminished, hope is maintained, and a functional older person emerges at the time of discharge to resume a normal productive life (Fig. 3.1) [6, 7].

The ACE Model was thus developed as a multi-component intervention specifically designed to address this hospital-acquired dysfunction, focusing on improving the management of acutely ill hospitalized older adults. ACE Consult Programs have been around since the 1990s, and implement specific practices targeting the comprehensive biopsychosocial and functional needs of the hospitalized older adult, starting at the moment of hospital admission. The four core principles of ACE include: (1) a prepared environment promoting mobility and orientation; (2) patient-centered care using nursing-initiated protocols for the promotion of independence spanning self-care to assessment of mood and cognition; (3) multidimensional assessment linking nonpharmacologic recommendations with promotion of optimal medication prescribing; and (4) interdisciplinary team rounds linked with comprehensive discharge planning that begins the day of the initial consultation in order to optimize the eventual care transition from the hospital.

ACE Consult Team

Comprised of a geriatrician as well as nursing leaders working together to lead an interdisciplinary team that might include any combination of physical and/or occupational therapy, social services, geriatric pharmacy, and dietary services, ACE programs aim to preserve the function of hospitalized elders, minimize iatrogenic events, minimize the use of potentially inappropriate medications, and decrease the rate of discharges to nursing homes [8]. As already briefly described above, the original concept of ACE was embodied in a discreet physical location of the hospital known as "the ACE Unit," where the interdisciplinary team led by a geriatrician serving in a consultative role would review the plan of care and round daily on older adults hospitalized on the unit [3]. The typical process that evolved consists of the admitting physician contacting a point person on the ACE team to help evaluate and guide care for his/her most vulnerable

seniors with complex medical and/or psychosocial needs. These needs might include the more commonly recognized geriatric functional syndromes as well as perhaps some less often appreciated conditions: delirium; depression and cognitive impairment; dizziness, syncope, falls and difficulty walking; generalized functional decline; incontinence and toileting needs; constipation; insomnia; malnutrition and weight loss; pressure ulcers; sensory impairment; and even helping to identify specific goals of care to assist with the eventual transition from hospital, which might require identifying a rehabilitation site aside from the patient's home. In some programs, these syndromes and conditions are made available to consulting teams as a list of "triggers" that might help them target patients who would benefit from ACE consultation. ACE consults in other settings might be directly facilitated by the ACE team themselves, through a process of case finding performed during daily interdisciplinary team rounds which might involve reviewing the hospital census to identify elderly patients in a certain age category, such as those over age 85 years.

Regardless of the method by which the ACE team receives consults, the standard consultation process has distinctive components performed by core team members that are fairly consistent across sites, often including any combination of the following disciplines: geriatrician, advanced practice nurse (APN), registered nurse (RN), medical social worker (MSW), case manager (either RN or SW as this role varies by facility), physical therapist (PT), occupational therapist (OT), pharmacy (PharmD), dietician, and pastoral care. Most core interdisciplinary ACE teams typically consist of at least a board-certified geriatrician along with any number of nursing leaders, such as an APN or Nurse Practitioner (NP) with specialized gerontological training who works together with the MD to lead the team. The Geriatrician's role is to coordinate the comprehensive evaluation of the patient's medical and geriatric functional issues as well as to conduct daily rounds which might have a heavy teaching component depending upon the setting (i.e., university or medical school-based vs. community-based hospital), whereas the role of the APN is typically to organize and help lead interdisciplinary rounds, assist in the assessment of complex cases, and to help educate all nursing and interdisciplinary staff about geriatric matters. The ACE team's RN, sometimes given the title of "ACE Resource Nurse," has the vital role of conducting prompt bedside assessment of the patient's physical, cognitive, and emotional status, communicating this information to the attending physician, and monitoring the patient for ongoing safety issues such as recognizing the use (and recommending the discontinuation) of unnecessary tethers such as Foley catheters. After comprehensive bedside assessment, the RN further assists the team's efforts by implementing nursing based protocols designed to address specific geriatric functional syndromes. When the role of the RN includes that of Case Manager, the ACE nurse also performs utilization management and coordinates discharge planning for each patient seen by the interdisciplinary team, all the while making sure the primary (admitting) team is apprised of the most updated recommendations to assure a smooth care transition. Some programs also have a Medical Social Worker (MSW) who further assists in collecting a comprehensive psychosocial history, helps with completion of Advance Directives, and might assist nursing in coordinating referrals to post-discharge sites of care such as skilled rehabilitation. The specific tasks will likely vary according to the composition of the ACE team and the needs of the hospital.

In addition to nursing and social services, the therapists and pharmacist are also essential members of the core ACE team. Physical, occupational, and sometimes even speech therapy are core team members who assist in the comprehensive geriatric functional evaluation and help guide the team regarding disposition, safety recommendations, and other highly practical information such as recommending specific durable medical equipment from which the patient will benefit. In addition to providing their opinions on the best discharge level of care and educating family members on safe transfers, devices, and overall home safety, physical therapy assists in evaluating patients for mobility problems and addresses the need for any devices to ultimately prevent functional decline, while occupational therapy focuses on the assessment of patient self-care skills and any necessary treatment needed to address specific debilities encountered. The pharmacist will typically have specific geriatric training and plays a critical role in completing comprehensive medication reconciliation on all new consults as well as performs a daily medication review on patients who have already received consultation, assisting the team in making appropriate recommendations which take into account the Beers List as well as trying to minimize polypharmacy. The Pharmacist might even serve the important role of assisting the geriatrician as a team teacher, especially if there are medical trainees and other learners on the team. Some ACE teams also include a nutritionist or dietician who will monitor the patient for weight changes as well as identify any unique dietary needs. A special geriatric focus of a dietician includes educating patients and caregivers about nutritional requirements for specific conditions or need for special diets (such as low fat or sodium restriction), and helping provide all medical personnel with recommendations for improving the patient's oral intake. Dieticians therefore also play a very important role in the hospital setting by advocating for patients by helping to recognize and hopefully avoid prolonged lengths of time when the patient might not be allowed to eat: for planned necessary testing, for suspected oropharyngeal dysphagia, and other conditions where an older adult might be admitted with *nil* per os status ("NPO") and rendered unable to eat for sometimes days until planned testing or evaluation is

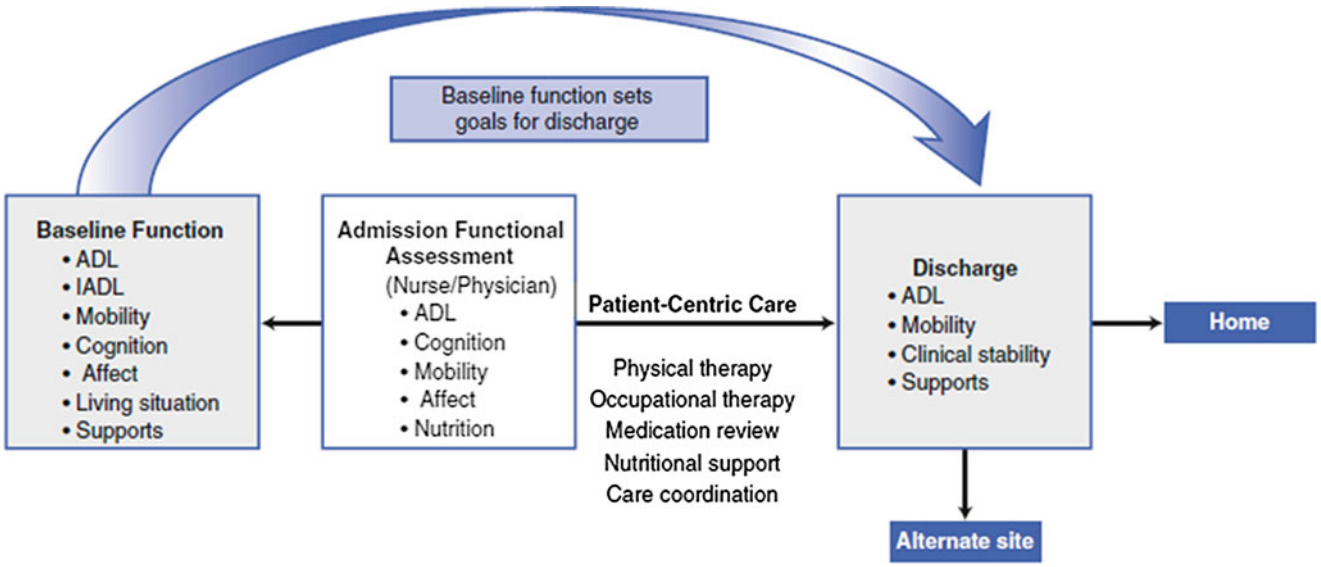

Fig. 3.2 Clinical pathway: the functional trajectory. *ADL* activities of daily living, *IADL* instrumental activities of daily living (From Palmer RM. Acute hospital care: future directions. In: Yoshikawa TT, Norman DC, editors. Acute emergencies and critical care of the geriatric patient. New York, NY: Marcel Dekker Inc; 2000:461-86 with permission.)

completed. The presence of pastoral care on a team assists through ministering to the spiritual needs of patients and families to help provide comprehensive, "total" care. Hence, the core ACE team might ultimately consist of over a half dozen individuals, all working together to develop a personalized and comprehensive plan of care for each patient seen. If a specific member is not included on the team in a particular healthcare system, it is critically important that such professionals are identified within the hospital and that they work closely with the ACE team to create a successful and comprehensive consult service whose ultimate focus is on helping transition of the patient from hospital to the safest site possible that maximizes the functional, medical, and personal care needs—ideally, back to the patient's home (Fig. 3.2) [6].

Given the sheer number of experts comprising the core ACE team, it is not surprising that ACE consultations are by nature comprehensive, detailed, and patient-centric. Collaboration between the interdisciplinary team members, and furthermore excellent communication of the team's recommendations to the consulting primary team, is critically important for a successful outcome. This interdisciplinary team collaboration is a hallmark that makes ACE consultation stand out from most other specialties and services, and even more unique in that it allows all team members to weigh in evenly in regard to the care of the patient, much unlike most modern medical teams that are organized in a physician-lead hierarchy. While the geriatrician is typically the leader of the ACE team, helping to energize and lead by example in providing excellent and passionate care for seniors, the successful geriatrician, and in turn the successful team, will have recognized that the most comprehensive consultative recommendations are comprised with the collective input of the whole team, taking into account each member's unique skill sets, and also recognizing the specific needs and goals of the patient and the family/caregiver(s). Once the initial ACE consultation is completed, it is rather customary that the ACE team will continue to follow the patient daily throughout hospitalization in a consultancy role, while the primary (admitting) team remains the one driving the overall care and management of the patient. This is a broad generalization, and as such there are exceptions to this standard. For instance, for ACE teams who have their own nurse-case manager, the ACE team might take over the actual discharge disposition of the patient, such as coordinating post-discharge community-based services including home health and other assistance to help assure a safe and sound patient care transition. This disposition is typically activated only after the primary team initiates an order to start the actual discharge process.

Given the detailed and informative set of recommendations that typically develop from the interdisciplinary team approach during an ACE consult, documentation of the team's findings and suggestions for optimizing care is critical. It is as important that these recommendations be documented thoroughly as it is they be entered timely into the patient's chart to efficiently direct care and safety needs. As electronic medical records (EMRs) have developed and disseminated over the nation, like many other hospital-based services, ACE teams have also taken advantage of

technology to develop tools varying from geriatric order sets to electronic triggers to even entire templates for documentation of the typically lengthy geriatric cognitive and functional assessments that result from interdisciplinary team member input. These electronic order sets, triggers, and templates vary greatly from setting to setting, for they can be easily adapted to meet the highly specialized and unique needs of every individual healthcare system where ACE has made its mark.

Challenges Faced by ACE Consult Programs

Given that the concept of the ACE team-facilitated comprehensive geriatrics assessment seems like a win-win for patient, family, nursing and other hospital staff, and medical teams themselves, it might be surprising that there are still inherent challenges to this model of care. Such challenges include at least three general themes which must be candidly addressed when developing an ACE Program in any setting: implementation rate of team recommendations, gaining hospital support to fund large (and sometimes even small) interdisciplinary teams, and the ongoing difficulties of maintaining and leading a team comprised of individuals with their own unique personalities, strengths, and weaknesses. For instance, for any consultation to be effective, the recommendations suggested by the consultant should be effectively communicated and ultimately implemented. The institution must therefore have the resources necessary to carry out the team's suggested recommendations in a timely fashion, whether this be various teams holding rounds that occur in physical proximity to each other, collaboration areas where inter-team communication can conveniently occur, an electronic medical record that supports expeditious sharing of recommendations in a format that is readily accessible to all involved in the care of the patient, or any combination thereof. In addition, the likelihood of consultant recommendations being readily implemented is also increased if the expectations of the consulting team are met through a limited number of concisely documented suggestions that are prioritized according to the most urgent needs at hand, versus a "laundry list" of recommendations spanning the alphabet. Other factors contributing to low adoption of the ACE team's recommendations include faulty communication, inappropriate timing, inadequate detail in the recommendations, difference in opinions, lost paperwork, and administrative or systems-based barriers [9].

The various barriers to implement a successful ACE Consult Model will naturally vary by institution, and might include availability of geriatrics-trained providers and personnel, accessibility of financial subsidy, and institutional backing from organizational leadership. Gaining hospital support and overall institutional buy-in is often the most significantly cited challenge to building and sustaining an interdisciplinary ACE team. Some consulting physicians might be under the misconception that the ACE service is in effect the "discharge planning service." To address such misjudgments, geriatric consultation programs can assist in both formal and informal ongoing staff education about common geriatric syndromes as well as the many other direct measurables by which ACE can help consultants, and ultimately the entire hospital, meet its "bottom line," whether the driving impetus is decreasing early readmissions, cutting length of stay, or some other determinant. The ACE consultation service may even develop a role in educating specialty physicians who care for older patients, thus sustaining an important function in "geriatricizing" the whole hospital.

Maintaining any team comprised of individuals with their unique personalities, strengths, and weaknesses takes exceptional leadership, dedication, support, and a passionate vision for the team's mission. The ACE team is no different; a mature team that practices effective interdisciplinary communication can improve patient outcomes, prevent iatrogenic complications, and promote efficient transitions in care. That said, as disciplinary boundaries broaden and sometimes overlap, which is often necessary in providing comprehensive management of complex patients, there is the risk of "stepping on toes" and having team members who might have conflicting opinions about best approaches. The geriatrician who has sought additional skills in team management and conflict resolution will be especially adept at bringing out the very best of the team, valuing everyone's individual input, while assisting the team to arrive at its common goal of improved patient care.

ACE Consult Program: Evaluation Measures

Tracking basic outcomes to demonstrate the impact of the ACE consult model is of paramount importance to ensure that the model is well implemented, has a positive impact on patient outcomes, and assure future team sustainability. Researchers may track additional findings to demonstrate model impact, but this effort often necessitates additional resources that may not be available to the average clinician, clinical department, or hospital planning to adopt the model. Recent advances in information technology, electronic ordering and medical record systems may help mitigate some challenges in data collection, but there are still limitations. The primary challenge for every ACE consult team is to determine what outcomes are most essential to track for the purposes of improving the team's processes and outcomes that enable the delivery of the highest quality care to hospitalized elders. These measurable outcomes should also take into account what is necessary to demonstrate the team's impact to hospital administration so that future support for the interdisciplinary team can be sustained.

A list of measures that can be easily tracked to understand the processes and impact of the ACE consult service includes: volume of the service (daily, weekly or monthly census); data on the type of patients served including demographics; data on providers seeking consultation (what services primarily request ACE consults, what types of consult questions are posed, etc.); and the success/rate of implementation of consult recommendations. Tracking the actual implementation of recommendations suggested by the consultant team, however, is often a more difficult task. One way to analyze the number of recommendations which are ultimately executed by the consulting team is to take a sampling of consults performed, and track the consistency of implementation of recommendations. If the ACE team determines that implementation rate is suboptimal, then perhaps follow up consultation might be performed to investigate this gap, potentially enabling the team to develop strategies to enhance future uptake.

As with processes and team impact, patient outcomes can be similarly tracked, and might include any of the following: 30-day hospital readmission rates; length of stay for patients receiving ACE consultation; avoidance of adverse events during hospitalization; functional status of patients at baseline and at time of hospital discharge; patient satisfaction; and patient disposition/discharge location. Of all these measures, the 30-day readmission rate is currently one of the most heavily scrutinized measures of hospital performance, by which individual services, hospitals, and even entire healthcare systems are being compared. For the ACE consult team attempting to track readmission rates, it will be extremely important to consider how these data should be interpreted given that readmission rates, without an adequate comparison group, might not be very useful in demonstrating the impact of the ACE team. For example, an ACE team that achieves exceptional patient outcomes with decreased mortality might actually have *increased* readmissions, as patients with complex comorbid conditions will invariably have ongoing acute care needs. Attempts to avoid adverse hospital-acquired events might include demonstrating a reduction in the documented number of catheter-associated urinary tract infections, falls, pressure ulcers, restraints, and cases of delirium—many of which are already tracked on the hospital level. Functional status, often included in studies on older adults and geriatric models of care, can be measured using a number of instruments such as the Katz Index of Activities of Daily Living. However, this may be challenging to measure for all patients seen in ACE consultation, for it may include tracking additional data beyond the availability of team resources. To get around this limitation, a team might decide to track a surrogate marker of functional status such as rate of institutionalization at the time of discharge. Patient satisfaction utilizing standardized instruments is often already tracked at the hospital level using the Hospital Consumer Assessment of Healthcare Providers and Systems survey (HCAHPS) and may therefore be an easier measure by which to demonstrate success. Regardless of which patient level measures an ACE team chooses to track, one important note is that outcome data might be very unhelpful in attempting to demonstrate the model's impact without a clearly and well defined comparison group. For instance, *with* an adequate comparison group, it will be possible to compare these outcomes and estimate the potential benefits of the ACE consult team. However, *without* a comparison group, these measures can still be tracked, but will likely be useful only in the sense of following trends for future quality improvement.

Studies have demonstrated improved clinical outcomes and cost savings from the ACE Unit model of care. More recent studies have also pointed toward the additional benefit of an ACE Model on care transitions. Flood et al. demonstrated lower costs and fewer all-cause rehospitalizations within 30 days for ACE Unit patients compared to similar patients cared for on a usual care unit [10]. Hung et al. describe a Mobile Acute Care for Elders (MACE) service utilizing a mobile interdisciplinary team that seeks to decrease the hazards of hospitalization, facilitate transitions of care, and provide patient and family education. In this study, the MACE service, a variant of the ACE Model, acts as the primary care team for patients from an outpatient geriatric clinic, and consists of a team including an attending geriatrician hospitalist, geriatric medicine fellow, social worker, and clinical nurse specialist. Although not part of the MACE team, providers of other disciplines, such as physical and occupational therapists and dieticians, are often consulted and work closely with the core MACE team. In the single-center, matched cohort study, MACE service patients were less likely to experience adverse events such as catheter-associated urinary tract infection, pressure ulcers, restraint use and falls, had shorter length of stay (LOS) by 0.8 days on average, and rated the quality of their care transition (as measured by the Care Transitions Measure [11]) higher than patients managed in general medicine as the comparison group; however, the rate of hospital readmission was not substantially different between the groups [12]. Researchers at Johns Hopkins University also sought to develop and pilot-test a model that combined the strengths of inpatient geriatric evaluation, co-management, and transitional care in a cluster-randomized trial of 717 hospitalized older adults on 4 general medicine services. In the two treatment groups, a geriatrician–geriatric nurse practitioner dyad assessed patients, co-managed geriatric syndromes, provided staff education, encouraged patient self-management, communicated with PCPs, and followed up with patients soon after discharge. The intervention was associated with greater patient satisfaction with inpatient care and slightly higher quality care transitions (though not statistically significant) [13].

Other studies have produced mixed results. In a 2012 published systemic review and meta-analysis of over 6,800 hospitalized elderly patients, Fox et al. demonstrate that acute geriatric unit care based on all or part of the ACE Model improves patient- and system-level outcomes, including fewer fall risks, less delirium, less functional decline at discharge from baseline 2-week pre-hospital admission status, shorter LOS, fewer discharges to nursing home, lower costs, and more discharges to home. There were no significant differences found in hospital readmissions, mortality, or post-hospitalization functional status compared with functional baseline before hospital admission [14]. Sennour et al. described a proactive geriatrics consultation service implemented in collaboration with hospitalists that incorporated the basic principles of ACE to prevent functional decline and improve the care of older hospitalized patients admitted with geriatric syndromes. This proactive consultation service demonstrated high level of satisfaction by hospitalists—96 % rated the service as excellent in helping them provide better care—while analysis of hospital administrative data revealed a shorter LOS and reduced hospital costs in patients receiving a geriatrics consultation [15]. This study was not designed to examine post-hospitalization care transitions or rehospitalization outcomes though the reduction in LOS is promising and evaluating the impact of this intervention on care transitions is a next step.

The Business Case for ACE Consult Programs

Under the current reimbursement system structure in the US, hospitals and large healthcare organizations must be able to proactively integrate evidence-based programs into their institutions in order to guarantee their financial survival. The situation is no different for ACE; regardless of how much focus is placed on comprehensive, exceptional care for the geriatric patient that the system knows is "right," if the program lacks vision for future funding, it will fail in the current economic climate. The healthcare system recognizes that patients with multiple medical problems like our elderly population are more likely to have multiple admissions with longer lengths of stay. The ACE consult service with its biopsychosocial approach to care as well as interdisciplinary team focus can minimize the cost and downstream financial repercussions of these hospitalizations. As described above, the ACE Model has aptly demonstrated that it can reduce functional decline, decrease length of hospital stays, diminish likelihood of nursing home placement at discharge, and in some cases lower unnecessary and expensive readmissions for which hospitals are now being fiscally penalized. The very nature of the ACE Model can thus be utilized to equip hospitals with the skills and strategies that have shown a positive result on the quality of care of hospitalized seniors, while at the same time lowering costs. A sound business model will thus ideally match the needs of the organization with the specific design of ACE team that research has demonstrated will best meet these demands.

The key components of the business case for any geriatrics model of care program include: (1) defining the actual challenge or scope of problem to be addressed; (2) describing the program clearly and concisely, while highlighting the high quality evidence demonstrating how the ACE Model of Care has been shown to improve outcomes; (3) outlining an executive summary of the program including all services involved with associated costs; (4) describing specifically the key components the proposed service is planning to address; (5) defining how the service will be evaluated including specific measures and outcomes to be tracked; (6) delineating all roles and responsibilities of the proposed team and how members will integrate into the current system; (7) developing a strategy for communicating outcomes to administration; (8) outlining an implementation schedule; and perhaps most importantly, (9) developing a sound financial plan that will demonstrate improvement in cost savings in the era of today's value-based healthcare market. Each of these components are vitally important, and can take much time and planning to develop. Without them, however, no matter how passionately dedicated, hard-working, and successful the team is, the chance for future failure is high whether program termination is due to economic downturn, changes in organizational structure or leadership, or someone else devises a "better" model that supplants interest in the original model of care. The successful ACE Models supported in the literature and described above all developed from an initial concept that began with a thorough and rigorous business model.

The Future of Acute Care for Elders

In May 2013, the Centers for Medicare and Medicaid Services (CMS) issued immediately actionable guidelines regarding discharge planning for condition of participation (CoP) for hospitals. These new requirements, extensive in expanding the scope of "discharge planning" to "transition planning," require that "a registered nurse, social worker, or other appropriately qualified personnel must develop, or supervise the development of, the evaluation" of care transition needs. The guidelines furthermore cite the benefits of an interdisciplinary team approach to hospital discharge planning, scheduling follow-up appointments and filling prescriptions prior to discharge, and follow-up phone calls within 24–72 h of discharge to ensure adherence to the care transition plan and identify any barriers. These are functions that may be performed by non-physician team members, should be coordinated with patients and families, and are

Table 1. Example of Printout from ACE Tracker Summarizing Risk Factor for Patients Aged of 65 or Older on a Hospital Unit

Patient Room/ Bed	Age	Length of Stay	History of Dementia	CAM	Number of Meds	Beers	Morse	HX of Falls	Bed Rest	P/T	O/T	RES	ADL	Cath	Press Ulcer	Wound Care	Braden Scale	Albumin	Social Services	Advance Directives
Patient A	76	2	N	N	13	N	60	Y	N	Y	Y	N	8	Y	Y	Y	17	ND	Y	N
Patient B	74	1	Y	N	7	N	50	Y	Y	N	N	N	6	Y	Y	Y	9	2.9	N	Y
Patient C	78	12	Y	Y	10	Y	50	Y	N	Y	Y	N	7	N	N	Y	14	3.9	Y	Y
Patient D	72	1	N	N	5	N	50	N	N	N	N	N	12	N	N	N	15	ND	N	N
Patient E	91	6	Y	N	8	N	60*	N	N	Y	Y	N	6*	N	N	N	14	ND	Y	N
Patient F	78	1	N	N	7	N	70	Y	Y	N	N	N	6	Y	N	N	16	ND	N	N
Patient G	75	1	N	N	0	N	45	N	N	Y	Y	N	12	N	N	N	14	4.3	N	N
Patient H	93	1	Y	N	12	N	65	Y	N	Y	Y	N	6	N	N	N	15	ND	Y	Y
Patient I	91	1	Y	N	1	N	95	Y	N	Y	Y	N	7	N	N	N	12	3.5	N	Y
Patient J	74	5	N	N	20	N	45	Y	N	Y	Y	N	7	Y	Y	Y	12*	ND	Y	Y
Patient K	72	6	N	Y	14	N	20	N	N	Y	Y	N	8	N	N	N	17	3.2	Y	Y
Patient L	83	3	N	Y	12	N	80*	Y	Y	Y	Y	N	8	Y	N	N	12	2.3	N	Y
Patient Totals			5	3	11	1		8	3	9	9	0		5	3	4			6	7

Report Date: 02/27/08.
Report Time: 17:17.
History of Dementia = Cognition as defined by nursing admission assessment of history of dementia or Alzheimer's disease.
CAM = Confusion Assessment Method[10] as performed by nursing staff on admission and repeated daily on high-risk patients.
Meds = Number of total prescribed medications given to the patient on a scheduled basis.
Beers = Administration of potentially inappropriate medications for use in older adults within the prior 48-hours.[9]
Morse = Morse falls risk from calculated on admission and daily by nursing staff. A score >45 indicates an increased risk of in hospital falls.[11]
Hx of Falls = Any history of falls prior to hospitalization as recorded on nursing admission assessment.
Bed Rest = Bed rest as determined by daily nursing database describing the patient's activity level.
PT = Physical therapy consultation ordered.
OT = Occupational therapy consultation ordered.
Res = Current use of a physical restraint device as recorded on nursing daily assessment.
ADL = Activity of daily living score for bathing, dressing, transferring, walking, using the toilet and eating. 0 score for requiring total assistance; 1 score for requiring some assistance; 2 score of independent. These data from nursing admission assessment are repeated every other day.
Cath = Urinary catheter in place as noted on nursing daily assessment
Press Ulcer = Pressure ulcer noted on nursing daily assessment.
Wound Care = Wound care consultation ordered.
Braden Scale = Calculated Braden Scale: 15–18 at risk, 13–14 at moderate risk, 10–12 at high risk, and 9 or below at very high risk.[12] These data are from nursing daily assessment.
Albumin = The most recent serum albumin value with an asterisk noting a value of 3.5 mg/dL or lower.
Social Services = Any documentation of a social service assessment.
Advance Directives = Any documentation of the presence of the patient's advance directives.
Y = Yes.
N = No.
ND = Not drawn.
* This score is less favorable than the admission score.

Fig 3.3 ACE tracker printout identifying geriatric risk factors for patients aged 65 or older on a hospital unit (From Malone ML, Vollbrecht M, et al. Acute Care for Elders (ACE) Tracker and e-Geriatrician: methods to disseminate ACE concepts to hospitals with no geriatricians on staff. J Am Geriatr Soc 2010;58:161–67 with permission.)

crucial components of a successful care transition. Most importantly, *they are the very tasks that are inherent to what an ACE team already does exceptionally well*. In addition to the new financial rules, CMS is also addressing the quality of transitions through new process mandates, holding hospitals accountable for successful care transitions, and expecting them to achieve these mandates by assessing the patients' functional and cognitive abilities, types of post-hospital care that will be needed, and patient caregiver/support systems in order to determine capacity for self-care and needs for appropriate post-hospitalization care settings. Encouraged is the development of collaborative relationships between hospitals, facilities, and providers who care for discharged patients [16]. Again, these tasks are inherent to the interdisciplinary comprehensive geriatrics functional evaluation performed by an ACE team, and thus can serve as a means by which the ACE Model can continue to emphasize its very essential role in achieving hospital outcomes as well as excellent all-inclusive patient care.

As the healthcare climate continues to evolve, the ACE Model of Care will need to acclimate to these constant changes to ensure its success and survival. One means by which the ACE Model can adapt is through harnessing the advances in information technology through the use of the electronic medical record (EMR) and computerized physician order entry (CPOE). The ability to identify vulnerable hospitalized older adults using an EMR is an innovative method whose design has already come to fruition with the "ACE Tracker." To address the barriers in dissemination of the ACE Model of Care, Malone and colleagues from the Aurora Health Care System have developed the software program ACE Tracker for use in several EMR systems in northern Wisconsin (Fig. 3.3). The ACE Tracker program collects existing data from a patient's EMR in real time to generate an individual patient level summary of geriatric clinical data and a unit-based summary spreadsheet of key geriatric risk factors in all hospitalized patients age 65 and older. These items include information such as LOS to date, total number and potentially inappropriate medications prescribed, risk of falls and skin breakdown based on nursing assessment screens, use of urinary catheters, and formal consultation to disciplines such as physical and occupational

therapy and social services. In 2010, Malone and colleagues published a descriptive pilot study using ACE Tracker as a means of disseminating the ACE Model of Care to hospitals and units that do not have consistent access to a geriatrician. Units using ACE Tracker experienced significant reductions in use of urinary catheters and significant increase in consultations for physical therapy. While changes in LOS or 30-day readmissions were not the primary objective of this study, the use of this novel health information technology in improving care transitions serves as an impetus for further research [17]. For example, such research might focus on aligning hospital-based ACE principles with telehealth and other home-based interventions to improve outcomes in disease-specific populations, including those living with certain chronic diseases such as congestive heart failure and chronic obstructive lung disease.

Medicare Rule Changes for Care Transitions, and How ACE Principles Can Minimize the Impact on Hospitals

Two certainties in health care are inevitable: costs will continue to rise, and the aging of baby boomers will exert further pressure on our country's healthcare system. Current systems of healthcare delivery are not designed to care for the aging population, and often older adults cared for in the hospital may experience inefficient, fragmented care that is costly but does not yield better health outcomes.

In a fee-for-service payment model, interventions that decrease rehospitalizations have not been financially rewarded historically due to the time required by providers to improve care coordination particularly during transitions of care. However, the Patient Protection and Affordable Care Act (PPACA), signed into law in 2010 institutes new quality-based Medicare rules encouraging hospitals and providers to improve care transitions and other quality of care processes [18]. The alignment of patient outcomes on the hospital level with reimbursement may further accelerate the adoption of models and practices that have demonstrated their potential in improving patient outcomes. Geriatric-focused models of hospital care offer effective ways to transform inpatient treatment for older adults, making care more efficient and safer for hospitalized elders. The support for the adoption of these evidence-based care models that improve outcomes and lower costs is an area of focus as hospitals anticipate increasing numbers of elders and become more driven by improvements in patient outcomes and quality. The ACE Consult Model has not only demonstrated evidence to support its efficacy, but it serves as a very accessible model of care for hospitals to adopt. Furthermore, ACE teams that are more mobile, focused on seeing patients anywhere in the hospital and not just on a dedicated "ACE Unit," will evoke even fewer barriers in terms of financing and logistics and thus will remain a very tangible and affordable means by which quality-focused outcomes can be achieved. In summary, as hospitals develop strategies to deliver better care to older adults and adopt models and practices that have the potential to improve patient care quality and safety, the ACE Consult Team is a demonstrable solution that is suitable for adoption.

Conclusions

Regardless of structure and form, the core of ACE remains the same: to improve outcomes in hospitalized elders by emphasizing patient-centered care, frequent interdisciplinary team rounds designed to manage geriatric syndromes, and early transition planning designed to achieve the best outcomes. Research demonstrates improved care, better prescribing practices, improved physical functioning, less restraint use, increased patient and provider satisfaction, and reduced length of stay and institutionalization rates. The Triple Aim of health care (improving care of the individual, improving the health of the population, and to do so while reducing per capita costs) [19] is a formidable challenge, but with care delivery and payment reforms encouraging a shift from episodic, segmented care toward integrated patient-centered care, it is achievable even for our most complex older patients. The ACE Model of Care stands at the very nexus of this continuously evolving climate, whether implemented on a dedicated ACE Unit or as an ACE Consult Program.

References

1. Vincent, GK, Velkoff VA. (2010, May). The next four decades the older population in the United States: 2010 to 2050. In U.S Census Bureau. Retrieved from http://www.census.gov/prod/2010pubs/p25-1138.pdf
2. Jencks SF, Williams MV, Coleman EA. Rehospitalizations among patients in the Medicare fee-for-service program. N Engl J Med. 2009;360:1418–28.
3. Landefeld CS, Palmer RM, Kresevic DM, Fortinsky RH, Kowal J. A randomized trial of care in a hospital medical unit especially designed to improve the functional outcomes of acutely ill older patients. N Engl J Med. 1995;332(20):1338–44.
4. Walter LC, Brand RJ, Counsell SR, et al. Development and validation of a prognostic index for 1-year mortality in older adults after hospitalization. JAMA. 2001;285(23):2987–94.
5. Boyd CM, Landefeld CS, Counsell SR, et al. Recovery of activities of daily living in older adults after hospitalization for acute medical illness. J Am Geriatr Soc. 2008;56(12):2171–9.
6. Palmer RM, Counsell SR, Landefeld SC. Acute care for elders units: practical considerations for optimizing health outcomes. Dis Manage Health Outcomes. 2003;11(8):507–17.
7. Pierluissi E, Francis DC, Covinsky KE. Patient and hospital factors that lead to adverse outcomes in hospitalized elders. In: Malone M, Capezuti E, Palmer RM, editors. Acute care for elders—a model for interdisciplinary care. New York: Springer Science and Business Media; 2014. p. 21–47.

8. Counsell SR, Holder CM, Liebenauer LL, et al. The acute care for elders (ACE) manual: Meeting the challenge of providing quality and cost-effective hospital care to older adults. Summa Health System: Akron, OH; 1998.
9. Were MC, Abernathy G, Hui SL, Kempf C, Weiner M. Using computerized provider order entry and clinical decision support to improve primary-care physicians' implementation of consultants' medical recommendations. J Am Med Inform Assoc. 2009; 16:196–202.
10. Flood KL, MacLennan PA, McGrew D, Green D, Dodd C, Brown CJ. An Acute Care for Elders Unit reduces costs and 30-day readmissions. JAMA Intern Med. 2013;173(11):981–7.
11. Coleman EA, Smith JD, Frank JC, Eilertsen TB, Thiare JN, Kramer AM. Development and testing of a measure designed to assess the quality of care transitions. Int J Integr Care. 2002;2:e02.
12. Hung WW, Ross JS, Farber J, Siu AL. Evaluation of a Mobile Acute Care for the Elderly (MACE) service. JAMA Intern Med. 2013;173(11):990–6.
13. Arbaje AI, Maron DD, Yu Q, Wendel VI, Tanner E, Boult C, et al. The geriatric floating interdisciplinary transition team. J Am Geriatr Soc. 2010;58(2):364–70.
14. Fox MT, Persaud M, Maimets I, O'Brien K, Brooks D, Trequnno D, et al. Effectiveness of acute geriatric unit care using acute care for elders components: a systematic review and meta-analysis. J Am Geriatr Soc. 2012;60:2237–45.
15. Sennour Y, Counsell SR, Jones J, Weiner M. Development and implementation of a proactive geriatrics consultation model in collaboration with hospitalists. J Am Geriatr Soc. 2009;57:2139–45.
16. Department of Health and Human Services, Centers for Medicare & Medicaid Services. Center for Clinical Standards and Quality/ Survey & Certification Group. Ref: S&C:13-32-HOSPITAL [Internet]. http://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/SurveyCertificationGenInfo/Downloads/Survey-and-Cert-Letter-13-32.pdf. Accessed August 10, 2014.
17. Malone ML, Vollbrecht M, et al. Acute Care for Elders (ACE) Tracker and e-Geriatrician: methods to disseminate ACE concepts to hospitals with no geriatricians on staff. J Am Geriatr Soc. 2010;58:161–67.
18. U.S. Department of Health and Human Services. About the Law [Internet]. http://www.hhs.gov/healthcare/rights/index.html. Accessed August 10, 2014.
19. Berwick DM, Nolan TW, Whittington J. The triple aim: care, health, and cost. Health Aff. 2008;27(3):759–69.