Education of Current and Future Providers

Kathryn E. Callahan and Rosanne M. Leipzig

A. Chun (ed.), *Geriatric Practice*, https://doi.org/10.1007/978-3-030-19625-7_3

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» *It is far more important to know what patient the disease has than to know what disease the patient has. –Attributed to Hippocrates*

What's so different about older people that they warrant having their own medical specialty? Some healthcare providers argue that older people suffer the same diseases as middle-aged people; they simply have more of them. This approach can lead to over- and underdiagnosis and over- and undertreatment for older adults, since the presentation, diagnosis, and treatment of diseases may be different, causing excess burden, morbidity, and mortality.

In this chapter, we will:

- Define the core features of geriatric medicine and a "Function First" approach to care [1], using the Geriatrics 5 M's [2].
- Discuss assessment of physical and cognitive function, and illustrate its implications for prognostication and personalized medicine for older adults.
- Review areas of competence needed by healthcare providers caring for older adults.
- Discuss what older adults need from their healthcare [3].

3.1 Core Features of Geriatric Medicine: "Function First" and "The Geriatrics 5 M's"

So what is unique about geriatric medicine? Firstly, older adults differ greatly one from the other, a phenomenon called the ***heterogeneity of aging***. Median life expectancy for an 80-year-old woman is 88.6; however, one in four will live to be over 93 years old, while another one in four will die before they are 85 [4]. Not taking this into account means you may be overtreating, putting someone through diagnostic tests and treatment for a condition they're unlikely to ever get sick from. Secondly, function is the primary driver of life expectancy and certainly the highest priority of older adults themselves [1]. There is also significant heterogeneity in function, and function is the best predictor of morbidity and mortality. Older adults can be stratified into those who are fit, vulnerable (also called pre-frail), and frail, and the more frail they are, the more likely that they will have bad outcomes and suffer adverse events from tests and treatments. Not taking this into account means you might recommend treatment for someone when their risk of a bad treatment outcome exceeds their likelihood of benefit from treatment.

Many other factors also argue against a solely disease-focused approach for older adults, including the age-related loss of physiological and functional reserve, the prevalence of multiple conditions (also called multimorbidity), and high rates of functional impairment. Further, the heterogeneity of aging demands individualized care: that is, an understanding of what the individual really needs and wants their medical care to focus on.

Table 3.1 The Geriatric 5 M's

Mind	Mentation Dementia Depression Delirium
Mobility	Gait and balance Falls prevention
Medications	Polypharmacy De-prescribing and optimal prescribing Adverse medication effects
Multicomplexity	Multimorbidity Frailty Complex psychosocial situations
What matters most	Individual's health goals and preferences

The **Geriatrics 5 M's** (Table 3.1) is a mnemonic focusing on five domains that are important in caring for older persons [2]. Specialty geriatricians are masters in these areas, not only by identifying these concerns but by providing comprehensive evaluation and integration of these into each patient's care. Making a review of the 5 M's a regular part of your practice will aid in your ability to tailor care for your older patients recognizing the heterogeneity of aging.

3.2 Geriatric Medicine Is Personalized Medicine

In medicine, we often teach that before you order a diagnostic test, you should know how the results would change your patient management; if they would not, why do the test? In a disease-based care model, it may be difficult to see how applying the principles of geriatric medicine would change management. To illustrate this, the next section provides case scenarios of older adults who are *fit*, *vulnerable*, or *frail*. There are several validated tools for stratifying older adults into these categories. What they have in common are measures of disease damage and dysregulation, physical function (muscle mass and strength, unintentional weight loss, exhaustion, slowness, loss of Activities of Daily Living (ADLs)), and cognitive function [5]. Frailty and vulnerability, or pre-frailty, identify people with decreased resiliency and more poor health outcomes than those who are fit, with the frail having the worst outcomes. Each case scenario is augmented by patient-specific answers to the 5 M's, demonstrating how this knowledge affects the patient's care plan.

Case Scenario One

Ms. DeAngelo is an 82-year-old woman with hypertension, type 2 diabetes mellitus (DM) without complications, and a history of colon polyps, who drove herself to her Annual Wellness Visit. She wants to discuss what her target goals should be for her blood pressure (BP) and her hemoglobin a1c, whether she should undergo any cancer screening, and if she needs all the medications she is currently taking (Table 3.2).

In Case Scenario One, Ms. DeAngelo would be considered a "**fit**" older person, so we would recommend:

- **Hypertension target goal**: Recent guidelines suggest a target BP of 130/80 for this community-dwelling older woman with increased risk of cardiovascular outcomes due to her DM [6]. Even though she is fit, she should still be checked for orthostatic hypotension since treatment may exacerbate this and her target BP should be based on her standing BP.
- **Diabetes target goal**: A hemoglobin a1c level between 7 and 8 will keep her from developing hypo- or hyperglycemia. Considering her excellent function, prognostication models would estimate she likely has at least another 5–10 years of life remaining, and would be unlikely to develop complications of diabetes during this time with this level of glucose control. If her hemoglobin a1c is ≤6.5, we would recommend de-escalating medications by tapering her metformin dose and monitoring [7].
- **Cancer screening**: Recommendations for cancer screening often have an upper age limit, since it takes years for a screen-detected cancer to clinically affect patients. The American Geriatrics Society recommends *offering breast cancer screening* every 2 years for those patients like Ms. DeAngelo with a life expectancy of 10 years or more, which would be reasonable given her good physical and cognitive function [8]. Colon cancer screening would depend on her prior screening and the polyp types previously found. It would be reasonable to *offer colon cancer screening* if her prior polyps were pre-cancerous and if she were due for a colonoscopy before she is age 85 [9]. After 85, the risk of colonic perforation increases while the risk of dying from a new colon cancer decreases, so screening colonoscopy may not be appropriate.
- **Medications**: Although she is taking eight medications, each has an appropriate indication, so she does not have polypharmacy. However, two of these medications should be used with caution in older adults. Tylenol PM contains diphenhydramine which is very anticholinergic and can cause delirium in elders, while ibuprofen can increase BP and cause congestive heart failure (CHF), acute kidney injury, and gastric ulcers. Alternative treatments, including nonpharmacological ones, should be discussed with her.
- She is interested in medications for urinary incontinence (UI). Nonpharmacological interventions are more effective and longer lasting than medications for UI. You should determine the type of UI (see ▶ Chap. 36) and then discuss her options for treatment. Many of the medications for treating UI are anticholinergic, which increase concerns for dry mouth and confusion.
- **Function**: Ms. DeAngelo is able to complete all her ADLs and gets exercise working in her garden. She does not have cognitive impairment; you could recommend a walking program with some strength training to further enhance her physical and cognitive function [13, 14]. It is important to determine if she is socially isolated, and if so, encouraging social connections within and outside the family may enhance her quality of life.
- **Advance care planning**: As she approaches 85 years old, an overall discussion of her goals of care is appropriate [10]. While she does not have a single dominant disease, she is at increased risk of death by age alone, and a better understanding of her healthcare priorities and end of life wishes can help guide much of her overall care.

Table 3.2 The Geriatric 5 M's of Case Scenario One

Mind	No cognitive concerns per patient/family. *Independent in her Instrumental Activities of Daily Living (IADLs), including finances.* Dementia screening (75+): negative (Mini-Cog) Depression screening: negative (PHQ-2) No delirium *Extended grief following husband's death; now no evidence mood disorder, memory loss*
Mobility	Timed up and go: 10 seconds (low risk for falls ≤11 seconds) 3-chair rise: 9 seconds (normal <10 seconds) One fall—tripped over garden hose; no injury *Lives in split-level home. Does all her own gardening and lawn maintenance (4+ hour stretches) 3 seasons out of the year*
Medications	For HTN: hydrochlorothiazide; losartan; amlodipineFor DM: metformin For arthritis: acetaminophen For osteoporosis: alendronate Occasional Tylenol PM, ibuprofen *She asks about treatment for urinary incontinence*
Multicomplexity	Multimorbidity: HTN, DM, OA, OP *Lives alone; son travels and stays weekends; granddaughter comes by twice a week*
What matters most	Independence is most important—cognition and physical function Advance care planning: full code *Will not consider a "rest home" and would prefer to stay home. Believes she can afford nursing home or home care if needed. Sons hold her healthcare powers of attorney*

Case Scenario Two

Ms. DeAngelo is an 82-year-old woman with hypertension, type 2 diabetes mellitus without complications, urinary incontinence, and a history of colon polyps, whose granddaughter drove her to her Annual Wellness Visit. They want to discuss her blood pressure and diabetes treatment, whether she should undergo any cancer screening, and if she needs all the medications she is currently taking (Table 3.3).

In Case Scenario Two, Ms. DeAngelo would be considered "**vulnerable or pre-frail**," so we would recommend:

- **Hypertension target goal**: Recent guidelines suggest a target BP of 130–150/80 for this community-dwelling older woman with moderate dementia, functional impairment, and increased risk of cardiovascular outcomes due to her DM [6]. It is important to be sure that none of her symptoms are due to these medications. The target BP goal would be an ideal subject for shared decision making with her and her family based on her concern for stroke (which could be devastating to her physical and cognitive function) versus the side effects and burdens of the four antihypertensive medications she is currently taking.
- **Diabetes target goal**: A hemoglobin a1c level of 8–9 should keep her from developing hypo- or hyperglycemia. Tight control of her diabetes will not improve her survival and is unlikely to improve her quality of life. Taking glipizide puts her at greater risk of hypoglycemia with subsequent falls or delirium. As discussed above, she is less cognitively and functionally intact as compared with Scenario One. While she is likely to live another 5 or more years, it is most likely that her trajectory will be a continued functional decline.
- **Cancer screening**: It is unlikely that breast cancer or colon cancer screening would help Ms. DeAngelo live longer or better. The preparation for colon cancer screening could cause dehydration, falls, or delirium—similar to her recent hospitalization. She may respond poorly to sedation for the colonoscopy. Screening cessation should be discussed with her and her granddaughter.
- **Medications:** Ms. DeAngelo has polypharmacy: she is on multiple medications which have unclear indications, and some that are high risk for older people. She may need fewer antihypertensives, and glipizide and naproxen should be stopped (older adults are at increased risk of bleeding and acute kidney injury from NSAIDs). Her risks of bleeding from aspirin are likely greater than any prevention benefits on cardiac disease or colon cancer at this stage of her life. The esomeprazole was likely prescribed as gastric protection from the aspirin and naproxen, and so can be discontinued if these are stopped. There should be a discussion with the family and patient as to whether the citalopram has helped her depression and if the oxybutynin has helped her incontinence. Was the sleeping problem new during hospitalization, and does she need help with sleeping now that she is home? Her initial questions suggest she would rather be on fewer medications, and we want her to only be on medications that will benefit her. She is at high risk

Table 3.3 The Geriatric 5 M's of Case Scenario Two

Mind	Cognitive concerns per patient/family. *Son has taken over her finances, and granddaughter does pill box weekly* *Dementia* case-finding: positive screens (Mini-Cog; follow-up MOCA 23/30) *Depression* screening: PHQ-2 positive for anhedonia. *Frustrated and tearful over loss of function and "independence." Fears further losses and ambivalent about family help* *Delirium*: recent hospitalization for pneumonia with mild delirium; this "revealed her memory problems," per granddaughter
Mobility	Timed up and go: 15 seconds (at risk for falls >11 seconds) 3-chair rise: 15 seconds (at risk for falls >10 seconds) *Fell when diagnosed with pneumonia—orthostatic and dehydrated—worked with physical therapy, but gave up many activities like lawn maintenance, and with fear or falling, she fears restarting gardening, too*
Medications	For HTN: hydrochlorothiazide; losartan; amlodipine; hydralazine For DM: metformin; glipizide For arthritis: acetaminophen, naproxen For osteoporosis: alendronate For incontinence: oxybutynin **New post-hospitalization**: esomeprazole; trazodone as needed for insomnia; citalopram; aspirin
Multicomplexity	Multimorbidity: HTN, DM, OA, OP, UI, likely depression *Lives alone; one son travels for work and stays weekends; granddaughter comes by twice a week but worries patient needs more. Patient fearful of going out by herself, doesn't want to move from her home (split level) to an assisted living facility but worries she is burdening family by staying home*
What matters most	Independence is most important, being able to do what she wants Advance care planning: DNR; would still want aggressive care in the event of a potentially reversible illness, but not to be "on a machine" long-term *She feels she is no different than she ever has been, except that she's slower and her memory is not as sharp. Would prefer to live at home. She has good insight into her physical challenges and early cognitive changes and feels she can hire in help as needed. Sons hold her healthcare powers of attorney*

for a hip fracture, so it makes sense to continue the alendronate (depending on how long she has been taking it and her bone mineral density).

- **Function**: Ms. DeAngelo's function has declined since prior to her hospitalization; despite completing PT, she has "fear of falling" and has concerns about trips outside her home. She is also depressed and becoming more physically isolated. Physical therapy should be reinstated with a goal of increasing her confidence walking outside. Her depression needs to be proactively treated with additional medications, talk therapy, or both. Consultation with a social worker could provide connections with Meals on Wheels and friendly visitors to aid with socialization. Once her depression lifts, she may be open to referral to community-based resources that could help her overcome her fear of falling, start a walking program, increase her strength, limit further functional decline, and enhance socialization. Depending on her cognitive testing, and a careful history with her family surrogates, she may need to give up driving. These conversations will be challenging, especially since insight and judgment are among the earliest losses in dementia. However, since she is early in her cognitive decline, discussing parameters for cessation of driving and other responsibilities are important. Plans for social and familial support will be critical to next steps as her dementia progresses.
- **Advance care planning**: She is approaching 85 years old with moderate dementia, multimorbidity, and functional decline. Her insight is fair, and she may be able to tell you her healthcare priorities and end of life wishes, and in particular, her wishes if she is no longer able to care for herself. Since dementia is progressive, she will never be better able to have this discussion.

Case Scenario Three

Ms. DeAngelo, an 82-year-old woman with hypertension, type 2 diabetes mellitus, and a history of colon polyps, declines to come for an Annual Wellness Visit—her son and granddaughter note, "She's not well – and it's hard to get her in even to go over all her problems." She sees you for a follow-up after falling, accompanied by her granddaughter (Table 3.4).

From these findings, Ms. DeAngelo would be considered a "frail" older person, so we would recommend:

- **Hypertension target goal**: 150/80. She is frail with dementia and recent falls, so you need to be sure that none of her symptoms are actually side effects of the three antihypertensive medications

Table 3.4 The Geriatric 5 M's of Case Scenario Three

Mind	Strong cognitive concerns per family. *One son handles her finances and healthcare needs, and the other is using the Family Medical Leave Act (FMLA) to help care for her; granddaughter helps when she can. Needs help with IADLs* *Dementia* case-finding: positive (Mini-Cog; MOCA 14/30.) Has had some hallucinations that scare her (children in the living room, knocking at the door during the night) *Depression* screening: PHQ-2 positive for anhedonia. *Feels as though she just "sits around." Recognizes need for help but tearful about moving from her home. Poor insight into cognition, frailtyDelirium*: Recent hospitalization for aspiration pneumonia with delirium; "she was a totally different person," per granddaughter, and has not recovered her pre-hospitalization baseline cognition and function
Mobility	Timed up and go: 25 seconds (at risk of losing an ADL in the next year) 3-chair rise: cannot stand without using her arms to get up from the chair *Fell yesterday when got up from couch—"legs just went out from under me." Needs prompting to use walker*
Medications	For HTN: hydrochlorothiazide; losartan; amlodipine For DM: metformin; lantus insulin For arthritis: acetaminophen For osteoporosis: alendronate For dementia: donepezil, memantine; risperidone prn hallucinations post-hospital For depression: citalopram
Multicomplexity	Multimorbidity: HTN, DM, OA, OP, UI (uses diapers), depression, moderate–severe dementia, lost 5% body weight over the last year *Lives with youngest son who has taken FMLA to stay with her. Granddaughter comes by three times a week to assist. All are concerned she may need more care than they can provide at home, but are distressed that she never wanted to live in a nursing home*
What matters most	She reports her family is most important—she cannot be more specific. Son and granddaughter recall that she has always been avid reader and a "wit"; now she cannot track a conversation or a novel. They worry her current life is not a quality of life she would value Advance care planning: DNR; no intubation/escalation to critical care *Family is struggling with home* versus *SNF. Patient is tearful through conversation and cannot understand why she should leave home but defers decision to her family. Sons hold her healthcare powers of attorney and durable power of attorney*

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she is taking. Eliminating some of these medications may help her avoid future falls. Although she is community-dwelling, she would meet requirements for SNF/nursing home living and therefore guidelines intended for this population. Despite some evidence that tight BP control may reduce strokes and cardiovascular mortality even in frail individuals, those with dementia were not included in these trials, and her decreased life expectancy (see below) and history of falls and dementia suggest that the risk of tight control is greater than benefit.

- **Diabetes target goal**: Considering her function, life expectancy, and weight loss, diabetes control should focus on avoiding the symptoms of hyperglycemia and hypoglycemia. Therefore, we would recommend de-escalating medications, in particular tapering the insulin [7]. A target hemoglobin a1c of, for instance, 8–9, may achieve this.
- **Cancer screening and other prevention**: Cancer screening will not help her to live longer or better, so should not be recommended. Continued treatment of osteoporosis is reasonable depending on how long she has been taking alendronate, as avoiding a fracture is important. Since she is having difficulty swallowing, and alendronate has very specific instructions for use to avoid esophageal ulcerations, may need to change to a different osteoporosis medication.
- **Medications**: As discussed above, her hypertension and diabetes can be managed with fewer medications, and she may need a medication to maintain bone density. There is no clear answer as to whether she should continue with donepezil and memantine—a discussion about pill burden, costs, and possible side effects is reasonable. There should be a discussion with the family as to whether the citalopram has helped her depression. Her episode of aspiration pneumonia suggests she is having some dysphagia, in which case taking medications with liquids could exacerbate this and it would be reasonable to decrease the numbers of medications and give them in food as opposed to sipping water.
- **Function:** She is sedentary, with dementia and increasing physical functional dependence. If she is able to participate, a chair yoga or walking program may help regulate her sleep-wake cycles and assist with behavioral and psychiatric symptoms of dementia. Her life-space is narrow [11]. She would benefit from a residential or community day program with a focus on care for memory impaired individuals or a memory care unit with potential for SNF level care, unless her family is able to provide 24-hour care soon.
- **Advance care planning**: First episodes of pneumonia and eating difficulties, especially dysphagia and aspiration, are "red flags" in people with dementia signaling an increased likelihood of dying over the next 2 years [12]. It's time to readdress her end-of-life care with her family, beginning discussions on whether, for example, she develops serious infections or stops eating, she would have wanted to be re-hospitalized, given a feeding tube, or receive antibiotics. It is always better to have these conversations in the office rather than in the midst of a crisis.

These three case scenarios illustrate how geriatrics medicine has to be personalized medicine and how using the 5 M's can help you work with your patient and their families to develop care plans that match their concerns and values.

3.3 Training Requirements and National Need

So how much geriatrics do you need to learn? And does every older person need a geriatrician's care? No, but every doctor who cares for older people needs to be competent in the care of older adults. What does this mean? First, comfort and facility with diagnosing and managing the diseases common to older adults that affect care across all specialties and subspecialties of medicine, as well as those unique to your discipline. Specific skills have been identified by the Institute of Medicine (now the National Academies of Sciences, Engineering, and Medicine (NASEM), the public policy arm of American medicine) [13]. Publications include expertise in cognition and dementia, physical function, frailty, chronic illness and multimorbidity, promoting community and social connectedness, and meeting older adults' preferences in the dying process. Each of these topics and skills represents a key component in the effective care of older adults. Each report has also demonstrated significant need for skills development.

This book is based on the AAMC/John A. Hartford Foundation medical student geriatrics competencies, and covers these domains: Medication Management; Cognitive and Behavioral Disorders; Self-Care Capacity; Falls, Balance, and Gait Disorders; Health Care Planning, Promotion, and Prevention; Atypical Presentation of Disease; Palliative Care; and Hospital Care. Competencies for Internal Medicine and Family Medicine also include Complex and Chronic Illnesses, and Transitions of Care. The public policy and educational arms of medicine are remarkably similar in their description of what healthcare providers must do to provide effective, person-centered care of older adults.

As reviewed in the first chapter of this book, the population of older adults is growing rapidly. In recognition of the changing demographics, the Institute of Medicine (now NASEM) released a guide for workforce development [14], entitled "Retooling for an Aging America." This call for "gerontologizing" the existing and upcoming healthcare workforce informed the financial support of foundations and government entities to support the career development of geriatrics educators, to incorporate geriatrics education into undergraduate and graduate medical education [15], and to define competencies in geriatrics care for students [16], generalists (Internal Medicine (IM) and Family Medicine (FM) residents) [17], specialists [18–20], and multidisciplinary care teams [21].

3.4 What Do Older Adults Need From Healthcare?

There are, fundamentally, three care needs of older adults: first, they need providers competent to care for most of them (so-called "little g" geriatricians) in primary care, specialty care, and surgical care; second, specialty geriatricians are needed to provide care for the most complex and frailest older adults and those with dementia (so-called "big G" board-certified geriatricians); and finally, the healthcare system must embrace person-centered care, optimizing personal goals and minimizing iatrogenic harm for older adults.

By integrating the geriatric principles taught and demonstrated in this book into the care of your older adult patients, you can help assure that your grandparents, parents, and eventually even you will get healthcare that enhances rather than burdens old age.

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