Embracing the Ecology of Geriatrics to Improve Family Medicine Education

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Family physicians currently provide almost half of the primary care for older patients in the United States. This proportion is expected to increase as the “baby boomers” age. Current care of older patients is characterized by poor recognition of mental status deficits, high use of inappropriate medications, inadequate recognition and treatment of geriatric syndromes, problems with quality of transitional care, and the need to incorporate new relevant bodies of knowledge, such as hospice and palliative care. Current family medicine training requirements do not address these needs, and training needs to be improved. Analysis of the medical ecology of geriatrics reveals extensive use of continuum-of-care services and institutions where large numbers of older patients receive care outside of the traditional teaching sites of hospitals and clinics. These continuum-of-care services and institutions, with their multidisciplinary teams and the patients in them, are ideal for family medicine resident education in many aspects of geriatrics. Family medicine can address these concerns by requiring a block rotation immersion experience around these themes that is integrated with the continuum of care.

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The group of patients defined by the Medicare benefit period of age 65 years and older will enlarge dramatically over the next 30 years as the “baby-boom” generation enters this age group. The proportion of people over 65 will grow from the present 13% to an estimated 22% of the population.1 Significant transformation of the health care system is expected as a result of the aging population.2

Family physicians currently provide about half of the ambulatory primary care for adults older than age 65.3,4 Almost 22% of visits to family physicians’ practices are from people in this age group.5,6 Future projections are that people over 65 will constitute at least 30% of a typical family medicine outpatient practice, 60% of their hospital practices, and 95% of nursing home and home care practices.7 Currently, approximately half of family physicians care for nursing home patients,8 and this percentage will likely increase too. So, overall, family physicians currently care for large numbers of older patients and clearly will do so in the future, too. But are they ready?

Weakness of Current Geriatric Care

The current medical literature documents inadequate patient care of older adults in several domains. Mental status issues rank high with poor recognition by health care providers of cognitive impairment in primary care settings.9 In fact, one study showed that physicians are unaware of cognitive impairment in 40% of their cognitively impaired patients. Another study showed that one quarter of patients at the time of a hospital transfer to a post-acute setting had a new but unrecognized abnormal mental status and met the criteria for delirium.10

The extensive and inappropriate use of medications in older patients is also well documented. The frail elderly use eight or more medications concurrently11 with the prevalence of inappropriate medication use running as high as 40% in nursing home patients and 21% in community-dwelling elderly.12-16 Thirty percent of hospital admissions and many preventable problems in older patients, such as falls and confusion, are thought to be related to adverse drug events.17 There is a clear need to improve appropriate medication usage in this age group.

The recognition of “geriatric syndromes” (eg, falls, urinary incontinence, and mental status change) is also

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poor. Geriatric syndromes typically have inadequate case recognition, lack of physician knowledge about management, poor patient adherence, and inadequate follow up. They do not fit our traditional research and teaching paradigms, and they challenge the classic way we approach symptoms and diagnosis. They have in common a multi-factorial etiology with single common symptom pathways. Because geriatric syndromes cross organ systems and disciplines, they are often not taught in traditional subspecialty rotations that compose family medicine residency requirements.

**Different Use of Health Care**

Different use of the health care system characterizes the geriatric age group. The term medical ecology is a conceptual framework that describes the relationship and utilization of medical care by a given population. Introduced by White et al\(^{12}\) in 1961, it was updated by Green et al\(^{12}\) in 2001. The medical ecology of the older patient is very different from that of the general population. Table 1 summarizes these differences from several sources.\(^{23,24}\)

There is 25 times the utilization of the emergency room and hospital by older patients then younger people. There is also much higher use of the services and institutions in the continuum-of-care: nursing homes, assisted living facilities, hospice, and home health. Higher use of the continuum-of-care will parallel the growth in this population.

This shift to caring for large numbers of patients in a continuum-of-care that is located away from acute care facilities and outpatient clinics requires new knowledge, skills, and attitudes on the part of family physicians. Family medicine has traditionally been an office- and hospital-based practice, and our training requirements reflect that bias. It is not clear that our trainees are prepared for the continuum-of-care.

Transitional care and related problems are another important aspect of the medical ecology of geriatrics. Transitional care is defined as patient transfers between different locations or different levels of care within the continuum-of-care.\(^{25}\) These kinds of transfers affect about 18% of the elderly population during a given 2-year period, and the time of transfer is a dangerous and vulnerable period.\(^{26}\) Many patients are transferred from acute care settings while they still have active unstable clinical conditions.\(^{27}\) Twenty percent of patients transferred between acute and long-term care facilities experience adverse drug events due to medication changes.\(^{28}\) This rate of adverse drug events is four times that of a corresponding ambulatory elderly population.\(^{29}\) Approximately 25% of patients transferred to sub-acute areas of the continuum-of-care will have characteristics of a delirium.\(^{30}\) This is a two-fold problem: poor recognition of patient conditions at the time of transfer and the need to recognize them on arrival in the continuum-of-care.

**New Fields of Knowledge**

New fields of medical knowledge and specialization have emerged in the past decade that have wide applicability to older patients. These new fields need to be incorporated into family medicine training. Effective in 2008, palliative and hospice care now has specialty recognition, a defined body of knowledge, fellowship requirements,\(^{31}\) and board certification. The current family medicine training requirements are silent on this entire area except for a reference to competence in end-of-life care.\(^{32}\)

**The Need for Change**

In summary, there is extensive evidence that family medicine training in geriatrics needs revision. There is inadequate recognition of mental status changes, poor medication management, inadequate recognition and care of common geriatric syndromes, lack of knowledge and skills to deliver care outside of traditional teaching sites, problems with quality transitional care, and the need to incorporate new critical bodies of knowledge such as hospice and palliative care.

**Family Medicine Education of Physicians in Geriatrics: Where We Are Now**

Current training expectations in geriatrics for family medicine programs can be found in the accreditation requirements of the Accreditation Council for Graduate Medical Education (ACGME).\(^{33}\) These requirements were revised in July 2007 and so reflect recent thinking. A review of these requirements reveals a paucity of required experience in geriatric training.

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**Table 1**

Medical Ecology Comparisons

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<thead>
<tr>
<th>Per 1,000 people</th>
<th>General Population</th>
<th>Medicare Population</th>
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<tbody>
<tr>
<td>Symptoms</td>
<td>800</td>
<td>950</td>
</tr>
<tr>
<td>Physician visits</td>
<td>217</td>
<td>400</td>
</tr>
<tr>
<td>Hospitalized</td>
<td>8</td>
<td>200</td>
</tr>
<tr>
<td>Home care</td>
<td>14</td>
<td>106</td>
</tr>
<tr>
<td>Emergency depart.</td>
<td>13</td>
<td>300</td>
</tr>
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Family medicine block requirements for care of the adult are 8 months in duration of which 6 months are to be in an inpatient setting. There are additional subspecialty requirements for adult care that include nine internal medicine subspecialty areas. Family medicine training in geriatrics is limited to two areas in these requirements, and these are merely labeled as subsections of “adult medicine” and “continuity” requirements.

The subsection of the adult medicine requirements for the “older patient” state that “Educational experiences must be in both common and complex clinical problems of older patients. (a) The training must include the appropriate preventive modalities, functional assessment, the physiologic and psychologic aspects of senescence, as well as the socio-cultural parameters of the patients and their greater community. The residents must have supervised clinical experiences dealing with common acute and chronic diseases of aging. The resident must learn about, and practically apply, a multidisciplinary approach to the care of older patients in the hospital, the FMC, the long-term care facility, and the home. (b) This experience must result in the competence of residents in preventive health care, promotion of independent living, and maximizing function and quality of life. Residents must develop competency in assessing and meeting the health care needs of declining elders, episodic, illness-related care, delivery of health care in the home, FMC, hospital, and long-term facility, and end-of-life care.”

There are no time requirements attached to these broad objectives, but the outcome in section (b) expects “competence.” There is no mention of the continuum-of-care directly but instead, the requirements use the singular term long-term facility that implies a physical structure instead of including the term services, which would include home health and hospice, part of the continuum-of-care.

The continuity section of the accreditation requirements includes cursory geriatric exposure to nursing home patients and the performance of home visits. These may or may not touch on appropriate geriatric issues. The requirements state that “(i) Resident panels must include continuity patients requiring home care and care in long-term care facilities to provide each resident with continuity experience in those settings.” “(ii) Nursing home experience must consist of at least two patients as a continuity experience over a minimum of 24 consecutive months, in addition to that which residents might experience as part of a rotation.” “(iii) Additionally, each resident must perform at least two home visits with at least one being for an older adult continuity patient.”

The same residency training document has extensive and explicit requirements for pediatrics and women’s health. Family medicine residents are expected to “complete 4 months of a structured experience in the care of infants, children and adolescents.” This is in addition to their family medicine clinic experience. Justifications for these extensive pediatric requirements include the recognition that this age group has growth and development milestones, unique illnesses, physiology, and pharmacology that is different than adults. This same argument can be applied to the care of older patients. The number of older patients is approaching the number of infants and children.

Similarly, the training requirements in maternity and gynecologic care are 2 months and 1 month respectively and include a minimum of 40 deliveries specified per family medicine resident during their training. Yet the proportion of family physicians who perform deliveries in their practices is only about 20%. In contrast, almost all family physicians will be caring for substantial numbers of older patients.

Table 2 summarizes current family physicians’ hospital privileges, and Table 3 summarizes the profile of a typical family physician’s patient care week.

In summary, geriatric training requirements are inadequate from the perspective of both current practice performance standards and patient care practice profiles. Current standards set high competency expectations without providing an appropriate time allocation or structure for them to be accomplished. In addition, many of the important areas discussed in the introduction are not mentioned.

**Recommendations for the Education of Family Physicians to Improve Geriatric Care: Where We Should Be Headed**

The outline for a more structured and expanded educational requirement for family medicine training for older patients begins to emerge when these themes are considered. First, the ecology of geriatrics has identified the significant use of the institutions and services

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**Table 2**

<table>
<thead>
<tr>
<th>Privilege</th>
<th>Percentage (%)</th>
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<tr>
<td>Hospital</td>
<td>78.8</td>
</tr>
<tr>
<td>Critical care unit</td>
<td>39.8</td>
</tr>
<tr>
<td>Intensive care unit</td>
<td>37.1</td>
</tr>
<tr>
<td>Pediatrics</td>
<td>67.5</td>
</tr>
<tr>
<td>Emergency department</td>
<td>40.5</td>
</tr>
<tr>
<td>Newborn nursery</td>
<td>57.4</td>
</tr>
<tr>
<td>Obstetrics without deliveries</td>
<td>28.3</td>
</tr>
<tr>
<td>Labor and delivery</td>
<td>20.6</td>
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in the continuum-of-care. An educational strategy to teach geriatrics should include patient care experiences in this continuum’s sites. They are very different from the hospital and clinic environments.

Second, family medicine residents working within the continuum-of-care should be exposed to the problems inherent in geriatric patients. These would include medication management, mental status concerns, and geriatric syndromes. Transitional care problems associated with the continuum-of-care occur in a dozen different types of scenarios, many not involving the hospital and outside of the clinic environment as outlined in Figure 1. Of the patients who undergo transitions, half will undergo three or more in succession, with 9% enduring nine transitions over a 2-year period of time. A rotation among the institutions and services of the continuum-of-care will capture these experiences.

Third, a transition from one setting to the next often signals a parallel decline in health status, often functional as well as medical. When a transition takes place, there should be careful inquiry regarding the medical and functional condition of the patient. Efforts to reverse functional loss along the dependency path are an important part of caring for older patients.

Fourth, patients in these settings have needs for palliative and hospice care. The use of continuum-of-care institutions and services for geriatric education is not new. Opportunities exist in these kinds of facilities to teach about end-of-life care that is not available elsewhere in the health care system. Many of these patients have severe dementia and other comorbid conditions with vexing ethical issues.

Finally, an exciting aspect of using institutions and services in the continuum-of-care is their use of multidisciplinary teams. Team meetings occur on a regular required basis in nursing homes, hospice, and home health care programs. Composed of social workers and physical, occupational, and speech therapists and nursing staff, they have great potential to teach the interdisciplinary care that is essential to geriatrics. The only missing element is often a physician.

Should our emphasis on teaching the care of this last phase of life and dying equal our current emphasis on the birthing process? Hospice and palliative care with its focus on symptom management and dying as a natural life phase has much more applicability to family physicians’ practice now and in the future. Only one in five family physicians currently practices obstetrics while most family physicians care for dying patients.

These educational experiences can be achieved by requiring curricular time as an immersion experience. A 2-month rotation with educational activities and patient care responsibilities for patients in continuum-of-care integrated with a clinic experience

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<tr>
<th>Practice Characteristic</th>
<th>Involvement/Week</th>
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<tr>
<td>Ambulatory visits</td>
<td>84.4</td>
</tr>
<tr>
<td>Hospital visits</td>
<td>8.3</td>
</tr>
<tr>
<td>Nursing home visits</td>
<td>2.8</td>
</tr>
<tr>
<td>Home visits</td>
<td>0.4</td>
</tr>
<tr>
<td>Nursing home patients supervised</td>
<td>9.4</td>
</tr>
<tr>
<td>Home health patients supervised</td>
<td>5.7</td>
</tr>
<tr>
<td>Hospice patients supervised</td>
<td>2.3</td>
</tr>
<tr>
<td>Medicare patients</td>
<td>21.9</td>
</tr>
</tbody>
</table>


would greatly improve familiarity and skill with these services and institutions and the care of the patients in them. It would promote the opportunity to learn palliative care and hospice skills with large numbers of patients. At least one of these 2-month requirements could be counted against the current adult care inpatient requirements.

The concept of the “trajectories of dying” is a recent helpful construct to use and organize the teaching of the last phase of life. First proposed by Lunney et al., four trajectories of dying were identified (Figure 2). Functional decline on the vertical axis is described as loss in activities of daily living (ADLs). One of the trajectories, “sudden death” involves no period of functional loss but is uncommon, experienced by only 7% of the population. The other three trajectories share a common pattern of the gradual loss of functional ability over long periods of time. What separates them are the starting degree of functional impairment and the trajectory of the decline. In the “terminal illness” model typified by patients who have cancer, individuals live a considerable period of time with their disease with excellent function but eventually experience a predictable and defined period of functional loss before death. Hospice was designed to accommodate this kind of dying process. The “organ failure” model, usually heart, lung, or liver disease, has a slower, less predictable decline in function punctuated by acute declines. The “frailty” model is characterized by long periods of time with very low levels of function, typically from neurological and musculoskeletal conditions. These three trajectories encompass more than 90% of the end-of-life patterns and are characterized by long periods of significant functional loss. These trajectories often require the use of the continuum-of-care, explaining the conceptual need for the continuum. The proposed training model is a much more comprehensive approach to dealing with the common trajectories of dying.

**Summary**

Family physicians provide almost half of the primary care of older patients, and there is documentation of the need for improvement in that care. The need to improve training and care of older people and the call for a geriatric focus in family medicine education is not new. The 1993 Institute of Medicine report, “Strengthening Training in Geriatrics for Physicians,” specifically recommended expanding geriatric medicine training in family medicine and internal medicine training programs to 9 months. Publications supporting additional geriatric training in family medicine residencies have appeared in *Family Medicine* with similar concerns over the last 2 decades.

But, family medicine adult care education requirements have not significantly changed since I completed my training 3 decades ago. Training requirements for older patients need to be expanded to address the current deficiencies in care, new practice settings, and new medical knowledge of this age group. At a minimum, a 2-month block rotation as an immersion experience in the continuum-of-care, as suggested by the ecology of geriatrics, would provide ideal training opportunities to address these unmet needs.

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**Figure 2**

End of Life Trajectories

![Figure 2](image-url)

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