Academic Geriatric Programs in US Allopathic and Osteopathic Medical Schools

By 2030, 20% of the US population will be older than 65 years, up from 12.4% in 2000. The aging of the US population will have a major impact on the practice of medicine and future health care costs for the elderly population. The principles of geriatric medicine practice that have been developed over the past 50 years, if widely applied to the care of older Americans, could improve cost-effective, quality care for the well elderly and older adults with chronic illness. In addition, research is needed to advance prevention and treatment of the diseases that result in the greatest functional loss among older individuals. Leadership, expertise, and commitment are required from geriatrics as well as all medical and surgical specialties and other health care disciplines.

Geriatric medicine integrates many aspects of medicine, including internal medicine, family practice, neurology, psychiatry, and rehabilitation. In addition, geriatric medicine emphasizes problems that are more common in older adults, particularly confusion and dementia, depression, falls and instability, incontinence, chronic pain management, sensory impairment, and end-of-life care, as well as the frequent co-occurrence of many of these problems. In addition, the delivery of medical services to older adults occurs not only in the familiar office and hospital settings but also in the patient’s home, retirement home, rest home/assisted living facilities, day care, nursing home, and hospice settings. Physicians work cooperatively with practitioners representing many health care disciplines, such as nursing, social work, and the various therapies. Physicians without training in geriatric medicine often lack the skills to care for patients in less-familiar settings or to practice in interdisciplinary teams.

A 1998 Association of American Medical Colleges (AAMC) report summarizing Liaison Committee on Medical Education curriculum data found that required geriatric medicine courses remained rare, although 98% of medical schools reported some form of required geriatric medicine experience. In 1998 and 1999, more than 40% of allopathic medical students reported that their medical schools’ geriatric medicine curriculum time was inadequate. In 1999, family practice and internal medicine residency programs...
graduated 9780 physicians, but only 269 subsequently entered geriatric medicine fellowships.\(^4\) Also in 1999, psychiatry residencies graduated 1056 physicians, with only 95 enrolling in geriatric psychiatry fellowships.\(^4\) During the same year, an additional 14 176 physicians graduated from other residency and fellowship programs (excluding pediatrics) whose specialties do not offer subsequent fellowships in geriatric medicine.\(^4\) Thus, formal geriatric medicine training for virtually all physicians ends with their residency training. Only 25 of the more than 90 Accreditation Council for Graduate Medical Education (ACGME) specialty program requirements (excluding pediatrics) currently make specific references to geriatric medicine training.\(^5\) Numerous national reports and health policy leaders have advocated for the establishment of academic geriatric programs in US medical schools,\(^6\)-\(^14\) but the development and characteristics of these programs have not been well documented. We report results from the first comprehensive national survey to assess the current status of US academic geriatric medicine programs.

**METHODS**

**Study Design**

The study was a cross-sectional survey of academic geriatric medicine programs in recognized allopathic and osteopathic medical schools in the United States. Subsequent surveys are planned at 3-year intervals. Longitudinal data from the American Medical Association (AMA) and the AAMC’s National Graduate Medical Education (GME) Census were also analyzed to track geriatric medicine and geriatric psychiatry fellowship positions and fill rates since 1995.

This survey is part of the Association of Directors of Geriatric Academic Programs (ADGAP) Longitudinal Study of Training and Practice in Geriatric Medicine. The longitudinal study will describe trends in academic geriatric medicine training and practice and relate these trends to the changing need for expertise in geriatric medicine. The Office of Geriatric Medicine and the Institute for Health Policy and Health Services Research at the University of Cincinnati Medical Center are developing the database. A national oversight panel was established to review, advise on, and approve the project work plan (see Acknowledgment).

**Survey Instrument**

A 12-page, 24-question survey instrument was developed with input from members of the project’s national oversight panel and was pretested by 5 academic leaders. The survey was divided into 5 parts: organizational structure, general program information (including budgeted staff and obstacles to achieving goals of the academic geriatric program), curriculum, budgetary issues, and information about the academic leader.

**Procedures**

The survey was mailed to the 144 allopathic and osteopathic medical schools accredited by either the AAMC or the American Association of Colleges of Osteopathic Medicine. The academic leader was defined as the one physician or other faculty leader at each medical school who was recognized by the dean as providing overall leadership for the academic geriatric medicine program. The director of the geriatric academic program (DGAP) for each school was identified by reviewing the membership list of ADGAP, by consulting with known geriatric academic leaders, and by searching the Web pages of each school. Immediately before the survey, contact was made with each school to verify the DGAP for that school.

The survey response rate was 84%, with 121 DGAPs responding (18/19 osteopathic schools and 103/125 allopathic schools). Responders and nonresponders did not differ by the number of enrolled medical students (\(U = 1241; P = .41\)), but most nonresponders (\(n = 11 \) [47.8%]) were in census region 31 (Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, and Florida) (\(\chi^2 = 27.127; P = .001\)).

**Academic Leaders**

Among allopathic schools, 81 (82%) of the DGAPs held their primary appointment in the department of internal medicine.
reported directly to their dean, 2 (11%) reported to the chair of internal medicine, and 4 (22%) reported to the chair of family medicine. Many DGAPs were members of important medical center committees, including curriculum (n=30 [34%]), executive steering (n=27 [30%]), and promotion/tenure (n=21 [24%]). Ninety-seven DGAPs (83%) received institutional support for a portion of their salary. The median support level was 50%, and 27 DGAPs (28%) received at least three quarters of their salary support directly from their colleges.

### Program Structure

Geriatric medicine programs are organized in a variety of structures that include departments, divisions, sections within a division, a unit within 2 departments, or a separate program, center, or institute. Academic geriatric units could be identified in 95 (92%) of allopathic and 10 (56%) of osteopathic medical schools; 67% were established after 1984. Thirty-two programs reported more than 1 structure but DGAPs were not always the leader of each of these units.

As of 2001, there were 6 departments of geriatric medicine, 3 in allopathic schools (Mt Sinai School of Medicine, New York, NY; University of Arkansas, Little Rock; and University of Oklahoma, Oklahoma City) and 3 in osteopathic schools (Philadelphia College of Osteopathic Medicine, Philadelphia, Pa; Western University of Health Science, Pomona, Calif; and Ohio University College of Osteopathic Medicine, Athens). The most common academic unit was a division or section within a division, a structure existing at 63 of the schools with identifiable structures. Forty-two schools (38 allopathic and 4 osteopathic) had an interdisciplinary structure consisting of a department; a unit within 2 or more departments; or a free-standing program, center, or institute.

### Program Resources

**Faculty and Staff.** The number of professional faculty and staff varied considerably among the geriatric programs. For example, while the median number of physician faculty was 5.0 full-time equivalents (FTEs), the range was 0 to 42 faculty. Fifty-nine programs (50.9%) had fewer than 6 physician faculty, 37 (31.9%) had 6 to less than 12, 11 (9.5%) had 12 to less than 18, and 9 (8%) had 18 or more physician faculty. The number of physician faculty was significantly lower at the osteopathic schools (median, 2 FTEs; range, 0-22 FTEs) compared with the allopathic schools (median, 6.5 FTEs; range, 0-42 FTEs) (U=343; P<.001). Overall, only 35 schools (30%) had 9 or more geriatric physician faculty, the number recommended by the Institute of Medicine. Other faculty and staff employed in geriatric academic programs are shown in Table I.

**Budgets.** Program budgets varied among the academic programs (Figure). Ten osteopathic programs (62.5%) reported budgets of less than $250000 per annum, while allopathic programs reported significantly higher budgets; only 18 allopathic programs (19.3%) reported budgets of less than $250000 (U=379; P=.001). Overall, 46 programs (42%) reported budgets greater than $1 million per annum. Program budgets were not correlated with medical school size, as measured by the number of enrolled medical students ($P=0.107$; $P=.27$). Table 2 lists the sources of income for allopathic and osteopathic schools. Most programs had diverse revenue sources, with clinical practice representing an important source of income; for all reporting schools, 27% of income came from clinical practice. The Veterans Health Administration (VHA) provided 13.1% of revenue for the allopathic academic geriatric programs. For medical schools with affiliated geriatric research, education, and clinical centers, the VHA contribution to total program revenue ranged from 5% to 48%. Five schools with geriatric research, education, and clinical centers did not report the VHA as a revenue source, so our data may slightly underestimate the overall contribution of the VHA to academic geriatric programs. The percentage of pro-
program revenue from educational and research grants and contracts was positively correlated with the geriatric programs’ annual budgets ($p = 0.558; P < .001$).

Centers of Excellence. To address the critical shortage of geriatric faculty members in medical schools, beginning in 1988 academic geriatric medicine centers of excellence were designated and funded by the John A. Hartford Foundation of New York, NY. The goal of the centers of excellence program is to enhance the training and research productivity of selected academic geriatric programs, particularly those with the ability to train future geriatrics faculty. The 27 responding centers of excellence (of 28 total) had a median of 21.7 FTE physician faculty and geriatric medicine or geriatric psychiatry fellows compared with a median of 5.5 FTEs for other programs ($U = 252; P < .001$). The centers of excellence had a median of 13 FTE physician faculty vs 3.6 FTEs at the other programs ($U = 249.5; P < .001$) and a median of 7 FTE fellows-in-training vs 2 FTEs for other programs ($U = 300; P < .001$). The centers of excellence had median annual budgets in the category of $2 million to $5 million compared with $250,000 to $500,000 for other programs ($U = 232.5; P < .001$) and budget reserves of $125,000 to $250,000 vs no reserve dollars for other programs ($U = 527; P < .001$). The centers of excellence received 14.1% of their revenue from clinical practice vs 30.6% for other programs ($U = 849.5; P = .02$), 31.3% from research grants and contracts vs 10.3% for other programs ($U = 376; P < .001$), and 7.3% from education grants/contracts vs 8.7% for other programs ($U = 935.5; P = .08$).

Program Priorities
The missions of academic geriatric medicine programs, as with medical schools in general, are diverse and complex. The allocation of geriatric medicine faculty and staff time illustrates this diversity (Table 3). Schools devoted about 40% of their effort to clinical practice (48% at osteopathic schools and 38% at allopathic schools). The allopathic schools tended to devote a higher percentage of resources to research and scholarship and residency and fellowship training than the osteopathic schools, while osteopathic schools placed more emphasis on medical student education.

Program Obstacles
The DGAPs rated 9 potential obstacles to achieving their programs’ goals (Table 4). Lack of research faculty and fellows and poor reimbursement for clinical care were each rated “significant” by more than 60% of the DGAPs. Osteopathic DGAPs in particular emphasized the lack of research faculty and also reported difficulty recruiting clinical fellows.

Future geriatrics faculty are trained at 181 allopathic geriatric medicine and geriatric psychiatry fellowship programs and 7 osteopathic geriatric medicine fellowship programs. Clinical certification now can be obtained with 1 year of training in allopathic programs. Despite this shorter training period, fill rates for geriatric medicine and psychiatry fellowship positions have been decreasing in recent years (Table 5). In academic year 2001-2002, approximately 41% of allopathic geriatric medicine fellows and 37% of geriatric psychiatry fellows were US medical school graduates, com-

**Table 1. Academic Staff in Geriatric Programs in Full-time Equivalents**

<table>
<thead>
<tr>
<th>Categories</th>
<th>All Schools (n = 116)</th>
<th>Allopathic Schools (n = 100)</th>
<th>Osteopathic Schools (n = 16)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physician faculty (MD, DO, or equivalent)</td>
<td>Mean: 7.5 Median: 6.5 (Range: 4-22)</td>
<td>Mean: 8.2 Median: 7.5 (Range: 4-22)</td>
<td>Mean: 3.3 Median: 2.0 (Range: 0.5-22)</td>
</tr>
<tr>
<td>Geriatric medicine and geriatric psychiatry first-year fellows</td>
<td>Mean: 2.4 Median: 2.0 (Range: 1-13)</td>
<td>Mean: 2.7 Median: 2.0 (Range: 1-13)</td>
<td>Mean: 0.3 Median: 0.0 (Range: 0-3)</td>
</tr>
<tr>
<td>Geriatric medicine and geriatric psychiatry fellows (second year and beyond) and MD postdoctoral faculty</td>
<td>Mean: 0.9 Median: 0.0 (Range: 0-7)</td>
<td>Mean: 1.0 Median: 0.0 (Range: 0-7)</td>
<td>Mean: 0.3 Median: 0.0 (Range: 0-2)</td>
</tr>
<tr>
<td>PhD postdoctoral staff without faculty appointment</td>
<td>Mean: 0.9 Median: 0.0 (Range: 0-20)</td>
<td>Mean: 1.0 Median: 0.0 (Range: 0-20)</td>
<td>Mean: 0.1 Median: 0.0 (Range: 0-1)</td>
</tr>
<tr>
<td>Research faculty (does not include MDs or faculty included in another category)</td>
<td>Mean: 2.5 Median: 2.0 (Range: 0-43)</td>
<td>Mean: 2.8 Median: 1.0 (Range: 0-43)</td>
<td>Mean: 0.2 Median: 0.0 (Range: 0-2)</td>
</tr>
<tr>
<td>Physician assistants</td>
<td>Mean: 0.3 Median: 0.0 (Range: 0-4)</td>
<td>Mean: 0.3 Median: 0.0 (Range: 0-4)</td>
<td>Mean: 0.0 Median: 0.0 (Range: 0-0.5)</td>
</tr>
<tr>
<td>Nurse practitioners</td>
<td>Mean: 1.9 Median: 1.0 (Range: 0-15)</td>
<td>Mean: 2.1 Median: 1.0 (Range: 0-15)</td>
<td>Mean: 0.3 Median: 0.0 (Range: 0-2)</td>
</tr>
<tr>
<td>Clinical nurse specialists</td>
<td>Mean: 0.7 Median: 0.0 (Range: 0-7)</td>
<td>Mean: 0.7 Median: 0.0 (Range: 0-7)</td>
<td>Mean: 0.1 Median: 0.0 (Range: 0-1)</td>
</tr>
<tr>
<td>Pharmacists</td>
<td>Mean: 0.3 Median: 0.0 (Range: 0-4)</td>
<td>Mean: 0.3 Median: 0.0 (Range: 0-4)</td>
<td>Mean: 0.1 Median: 0.0 (Range: 0-1)</td>
</tr>
<tr>
<td>Social workers</td>
<td>Mean: 1.0 Median: 0.5 (Range: 0-6.2)</td>
<td>Mean: 1.1 Median: 1.0 (Range: 0-6.2)</td>
<td>Mean: 0.3 Median: 0.0 (Range: 0-1)</td>
</tr>
<tr>
<td>Other professional support staff</td>
<td>Mean: 0.9 Median: 0.0 (Range: 0-23)</td>
<td>Mean: 0.9 Median: 0.0 (Range: 0-23)</td>
<td>Mean: 0.3 Median: 0.0 (Range: 0-3)</td>
</tr>
</tbody>
</table>

*Not including clinical support staff.

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**Figure. Geriatrics Programs’ Annual Budgets for Academic Year 2000-2001 (n = 109)**

![Figure showing distribution of annual budgets by millions of dollars](image-url)
pared with US medical school graduate fill rates of 60% for cardiology, 56% for infectious disease, 89% for ophthalmology, and 82% for general surgery. Academic development of future geriatrics faculty generally requires 1 to 3 years of additional training beyond clinical certification. In academic year 2000-2001, only 68 geriatric medicine fellows (27%) and 3 geriatric psychiatry fellows (3%) continued training beyond year 1.

**COMMENT**

This survey of academic geriatric medicine programs in US medical schools illustrates the significant progress academic geriatrics has made in the past 25 years, as well as the challenges that programs face in meeting the needs of the aging population. The existence of a leader in geriatric medicine in all 144 US medical schools and a distinct academic geriatric medicine program in 105 (87%) of the 121 responding schools demonstrates remarkable progress.

Geriatric program structures vary, but it is too early to declare a “best” approach. Although it has been stated that academic geriatric medicine programs will develop most effectively in an environment that encourages cooperation among medical disciplines, other health disciplines, and social scientists, the optimal organizational structure for geriatric programs remains unclear. Medical schools are organized around discipline-specific departments, with department leaders holding most of the power and control for negotiating resources from the dean. In this context, academic geriatric medicine programs have struggled to take root in many US medical schools despite generous support from the federal government, especially the National Institute on Aging and the VHA; some state governments; and the private sector, especially the John A. Hartford Foundation. Even though there are currently only 6 departments of geriatric medicine, one third of the academic leaders report directly to their dean. This typically creates access to new resources and continued interdepartmental influence. However, many of the academic leaders are division chiefs within a single department, and it remains to be seen if they can provide institutional leadership.

The relatively low number of fellowship-trained DGAPs (42% of the leaders surveyed) reflects the youth of the discipline. Leadership has been drawn from senior faculty who completed their formal training before the availability of fellowship programs. Since geriatric fellowships became more common after 1980, it is likely that most of these senior faculty are nearing the end of their careers, suggesting the demand for new leaders will be high in the coming decade.

A 1993 report argued that US medical schools and residency programs had a significant shortage of geriatric medicine faculty. An Institute of Medicine national advisory panel recommended that each medical school have 9 geriatric physician faculty to sustain their programs, but our survey found that 81% (70%) of the respondents had fewer than 9. Many programs lack the financial resources to recruit additional faculty, particularly clinician-educators. While mechanisms existed through the National Institute on Aging, the VHA, and the private sector to support the career development of cli-

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nicians, similar career support mechanisms currently are rare for clinician-educators. Funding from the Donald W. Reynolds Foundation (Las Vegas, Nev) Geriatric Education Program,27 the Hartford Foundation through the AAMC medical student curriculum initiative,28 and the Bureau of Health Professions Geriatric Academic Career Award has been established to help support new clinician-educator faculty.

The variance in medical school spending on geriatric medicine reflects the diversity of the size and scope of the various programs. The centers of excellence strategy to yield maximum training of the next generation of academic leaders appears effective for these schools, but many medical schools with smaller geriatric medicine programs apparently do not have the resources to recruit new faculty from these centers of excellence. New strategies to nurture these emerging programs are required.

The DGAPs reported that the primary obstacle to the development of their academic programs was the lack of research faculty and fellows. The recruitment of high-quality fellows into geriatric medicine and geriatric psychiatry programs remains a challenge for the discipline.26,29 The source of applicants for geriatric medicine training is primary care residency programs, and geriatric medicine shares many of the current challenges faced by primary care, including the growth of specialization, the growing income gap between specialists and generalists, managed care, and protechnology biases in fee-for-service payment,30 as well as economic dependence on the complex Medicare program. In response to the concern that the original 2-year geriatric medicine fellowship deterred graduates of family practice and internal medicine residency programs, in 1998, geriatric clinical training was reduced from 2 years to 1 year for geriatric medicine board eligibility. This change may attract applicants with a stronger interest in clinical geriatric practice,31 but recruiting fellows and retaining future research faculty trainees remain a significant challenge. In a recent survey of geriatric medicine fellowship graduates, half of the survey respondents reported being influenced by a role model or mentor. Faculty role models that embody geriatric career pathways as clinician-educators and research scientists will be essential to the growth of academic geriatrics.32

The DGAPs also reported concern about the impact of poor reimbursement for clinical activity. Medicare is the primary payer for most clinical services provided by geriatricians. In addition to relatively low clinical reimbursement levels, Medicare’s teaching and supervision guidelines further burden teaching physicians, and these documentation rules are particularly challenging in the home and nursing home setting.

Our study has some limitations. While our response rate of 84% is very good, 23 medical schools are not represented in this report. Furthermore, the accurate gathering of faculty and staff numbers and budget detail for complex, interdepartmental programs is challenging and may add to the variability of our data. Academic programs are always changing, and our report describes the status of geriatric medicine programs in the spring of 2001; follow-up surveys will provide a longitudinal view of academic geriatric medicine.

In summary, after substantial public and private investment over the past 25 years, many medical schools now have credible academic geriatric programs with the faculty and resources to implement clinical, educational, and research activities. However, many other academic centers lag far behind the program development required to ensure the adequate training of all future physicians. The need continues for investment in training faculty as teachers and researchers and development of medical school geriatric programs that are the size and scope of other academic disciplines.

**Author Contributions:** Study concept and design: Warshaw, Bragg, Shaull. Acquisition of data: Warshaw, Bragg, Shaull. Analysis and interpretation of data: Warshaw, Bragg, Lindsell. Drafting of the manuscript: Warshaw, Bragg. Critical revision of the manuscript for important intellectual content: Warshaw, Bragg, Shaull, Lindsell. Statistical expertise: Lindsell. Obtained funding: Warshaw. Administrative, technical, or material support: Warshaw, Bragg, Shaull. Study supervision: Warshaw, Bragg.

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