COUNCIL ON GRADUATE MEDICAL EDUCATION

Twenty-First Report

Improving Value in Graduate Medical Education

AUGUST 2013

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The views expressed in this document are solely those of the Council on Graduate Medical Education and do not necessarily represent the views of the U.S. Government.

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COUNCIL ON GRADUATE MEDICAL EDUCATION

The Council on Graduate Medical Education (COGME) was authorized by Congress in 1986 to provide an ongoing assessment of physician workforce trends, training issues, and financing policies and to recommend appropriate Federal and private-sector efforts to address identified needs. The legislation calls for COGME to advise and make recommendations to the Secretary of the Department of Health and Human Services (DHHS); the Senate Committee on Health, Education, Labor, and Pensions; and the House of Representatives Committee on Commerce. Since 2002, COGME has been extended through annual appropriations. The legislation specifies 17 members for the Council. Appointed individuals are to include representatives of practicing primary care physicians, national and specialty physician organizations, international medical graduates, medical student and house staff associations, schools of medicine and osteopathy, public and private teaching hospitals, health insurers, business, and labor. Federal representation includes the Assistant Secretary for Health, DHHS; the Administrator of the Centers for Medicare and Medicaid Services, DHHS; and the Chief Medical Director of the Department of Veterans Affairs.

CHARGE TO THE COUNCIL

The charge to COGME is broader than the name implies. Title VII of the Public Health Service Act, as amended, requires COGME to provide advice and recommendations to the Secretary and Congress on the following issues:

1. The supply and distribution of physicians in the United States;
2. Current and future shortages or excesses of physicians in medical and surgical specialties and subspecialties;
3. Issues relating to international medical school graduates;
4. Appropriate Federal policies with respect to the matters specified in items 1–3, including policies concerning changes in the financing of undergraduate and graduate medical education (GME) programs and changes in the types of medical education training in GME programs;
5. Appropriate efforts to be carried out by hospitals, schools of medicine, schools of osteopathy, and ac-crediting bodies with respect to the matters specified in items 1–3, including efforts for changes in undergraduate and GME programs;
6. Deficiencies in, and needs for improvements in, existing data bases concerning the supply and distribution of, and postgraduate training programs for, physicians in the United States and steps that should be taken to eliminate those deficiencies;

7. Encouraging entities providing graduate medical education to conduct activities to voluntarily achieve the recommendations of the Council as warranted; and
8. Development of performance measures, longitudinal evaluations and recommendation of appropriation levels for programs under COGME's charge.

In addition to providing advice and making recommendations to both the Secretary and Congress, the COGME shall also:

- Encourage entities providing graduate medical education to conduct activities to voluntarily achieve the recommendations of the Council.

COGME PUBLICATIONS

REPORTS

Since its establishment, COGME has submitted the following reports to the DHHS Secretary and Congress:

- First Report of the Council (1988);
- Second Report: The Financial Status of Teaching Hospitals and the Underrepresentation of Minorities in Medicine (1990);
- Third Report: Improving Access to Health Care Through Physician Workforce Reform: Directions for the 21st Century (1992);
- Fourth Report: Recommendations to Improve Access to Health Care Through Physician Workforce Reform (1994);
- Fifth Report: Women and Medicine (1995);
- Sixth Report: Managed Health Care: Implications for the Physician Workforce and Medical Education (1995);
- Seventh Report: Physician Workforce Funding Recommendations for Department of Health and Human Services' Programs (1995);
- Eighth Report: Patient Care Physician Supply and Requirements: Testing COGME Recommendations (1996);
- Ninth Report: Graduate Medical Education Consortia: Changing the Governance of Graduate Medical Education to Achieve Physician Workforce Objectives (1997);
- Tenth Report: Physician Distribution and Health Care Challenges in Rural and Inner City Areas (1998);
- Eleventh Report: International Medical Graduates, The Physician Workforce and GME Payment Reform (1998);
- Twelfth Report: Minorities in Medicine (1998);
- Thirteenth Report: Physician Education for a Changing Health Care Environment (1999);
- Fourteenth Report: COGME Physician Workforce Policies: Recent Developments and Remaining Challenges in Meeting National Goals (1999);

- Fifteenth Report: Financing Graduate Medical Education in a Changing Health Care Environment (2000);
- Sixteenth Report: Physician Workforce Policy Guidelines for the United States, 2000–2020 (2005);
- Seventeenth Report: Minorities in Medicine: An Ethnic and Cultural Challenge for Physician Training, an Update (2006);
- Eighteenth Report: New Paradigms for Physician Training for Improving Access to Health Care (2007);
- Nineteenth Report: Enhancing Flexibility in Graduate Medical Education (2007); and
- Twentieth Report: Advancing Primary Care (2010).

OTHER COGME PUBLICATIONS

- Scholar in Residence Report: Reform in Medical Education and Medical Education in the Ambulatory Setting (1991);
- Process by which International Medical Graduates are Licensed to Practice in the United States (September 1995);
- Proceeding of the GME Financing Stakeholders Meeting (April 11, 2001) Bethesda, Maryland;
- Public Response to COGME's Fifteenth Report (September 2001);
- Council on Graduate Medical Education and National Advisory Council on Nurse Education and Practice: Collaborative Education to Ensure Patient Safety (February 2001);
- Council on Graduate Medical Education: What Is It? What Has It Done? Where Is It Going? 2nd edition (2001);
- 2002 Summary Report (2002).

COGME RESOURCE PAPERS

- Preparing Learners for Practice in a Managed Care Environment (1997);
- International Medical Graduates: Immigration Law and Policy and the U.S. Physician Workforce (1998);
- The Effects of the Balanced Budget Act of 1997 on Graduate Medical Education (2000);
- Update on the Physician Workforce (2000);
- Evaluation of Specialty Physician Workforce Methodologies (2000); and
- State and Managed Care Support for Graduate Medical Education: Innovations and Implications for Federal Policy (2004).

COUNCIL MEMBERSHIP

Chairman
David Goodman, M.D., M.S.
Professor of Pediatrics and Health Policy
The Center for Health Policy Research
The Dartmouth Institute for Health Policy and Clinical Practice
Lebanon, New Hampshire

Vice Chair
H. David Reines, M.D., F.A.C.S.
Professor of Surgery, VCU
Vice Chair of Surgery, Inova Fairfax Hospital
Director of CME, Inova Health System
Falls Church, Virginia

Kirk Calhoun, M.D.
President
The University of Texas Health Science Center at Tyler
Tyler, Texas

Michael Core, M.D.
Assistant Professor of Clinical Family Medicine
Department of Family Medicine
Keck School of Medicine of USC
Los Angeles, California

Erin Corriveau, M.D., M.P.H.
Resident Physician
Johns Hopkins Bloomberg School of Public Health
Baltimore, Maryland

Mary Ellen Rimsza, M.D., F.A.A.P.
Professor of Pediatrics
Tucson, Arizona

Keya Sau, Ph.D.
1903 Burdett Avenue
Troy, New York

Kenneth I. Shine, M.D.
Executive Vice Chancellor for Health Affairs
The University of Texas System
Austin, Texas

Gamini S. Sooriyaarachchi, M.D., M.B.A., F.A.C.P., F.R.C.P., C.P.E.
Medical Director, Alegent Creighton Bergan Mercy Cancer Center
Clinical Professor of Medicine, Creighton University School of Medicine
Nebraska Cancer Specialists
Omaha, Nebraska

David Squire
Assistant Dean, Finance
University of Utah School of Dentistry
Salt Lake City, Utah

Keith Watson, D.O.
President
Pacific Northwest University of Health Sciences
Administration, Iron Horse Lodge
Yakima, Washington

Daniel J. Winn, M.D.
Vice President & Senior Medical Director
CareFirst BlueCross BlueShield
Baltimore, Maryland

Statutory Members

Assistant Secretary for Health
Administrator Centers for Medicare and Medicaid Services
Undersecretary for Health Veterans Health Administration

Designee of the Assistant Secretary for Health
J. Nadine Gracia, M.D., M.S.C.E.
Deputy Assistant Secretary for Minority Health
Office of Minority Health
U.S. Department of Health and Human Services
Washington, DC

Designee of the Department of Veterans Affairs
Karen M. Sanders, M.D.
Deputy Chief, Office of Academic Affiliations (10A2D)
Veterans Health Administration
810 Vermont Avenue, N.W.
Washington, DC

Designee of the Centers for Medicare and Medicaid Services
Tzvi M. Hefter
Director, Division of Acute Care
Centers for Medicare and Medicaid Services
Baltimore, Maryland

Federal Staff

Kathleen Klink, M.D.
Director

Jerilyn K. Glass, M.D., Ph.D. (retired)
Designated Federal Officer

Shane Rogers
Designated Federal Officer

Division of Medicine and Dentistry
Bureau of Health Professions
Health Resources and Services Administration
U.S. Department of Health and Human Services
Rockville, Maryland

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This report is the result of a collaborative effort by the members of the Council and others. Two writing groups wrote initial drafts and a third worked to combine the efforts.

The first writing group developed recommendations and background related to the training pipeline, funding, and workforce requirements. Members of this group included:

David Reines, M.D. (Chair)
Kenneth Shine, M.D.
Gamini S. Sooriyaarachchi, M.D., M.B.A.
Daniel J. Winn, M.D.

The second writing group focused on training recommendations. The members of this group included:

Carol Carraccio, M.D., M.A. (Chair)
Mary Ellen Rimsza, M.D.
Keith Watson, D.O.

A third group combined the drafts of the writing groups, added background content, and edited the report's many subsequent drafts. This group included:

David C. Goodman, M.D., M.S. (Chair)
J. Nadine Gracia, M.D., M.S.C.E.
Kirk Calhoun, M.D.
Michael Core, M.D.
Erin Corriveau, M.D.
Tzvi M. Hefter
Karen Sanders, M.D.
Keya Sau, Ph.D.
David Squire

Finally, the Council would like to acknowledge the efforts of the following federal staff:

Kathleen Klink, M.D.
Jerilyn Glass, M.D., Ph.D.
Shane Rogers
David Kirby, J.D.
Iwona Grodecki
Marjorie Taylor

EXECUTIVE SUMMARY

The United States depends on graduate medical education (GME) to train a physician workforce able to provide evidence-based care in a rapidly evolving health care delivery environment. Ensuring high quality GME requires the participation and coordination of many stakeholders – physicians, faculty, teaching programs and their sponsoring institutions, accreditation and professional organizations, specialty boards, and, most importantly, patients. The important societal benefits of GME are reflected in the levels of public funding, totaling more than $13 billion per year.

The nation's goal of having the very best physician workforce in the world faces challenges. The population is aging and becoming increasingly disparate in economic status. The health care delivery system is changing more rapidly than medical education. Even as health care systems face these new problems, past problems remain unsolved – physicians are poorly distributed geographically in relation to population needs and have become increasingly specialized, while primary care remains under-resourced.

GME is responsible for developing the future physician workforce but falls short in several areas. Training program size and specialty mix are sometimes at odds with the nation's health workforce requirements. Many teaching hospitals have not recognized the need for a greater emphasis on primary care training, and curriculum is often inadequate in the areas of population health, care coordination, team-based practice, and other aspects of new systems of care. National accreditation organizations have been slow to lead these necessary changes. In the past 15 years, Congress has been reluctant to invest additional public funds in GME. The stasis in funding levels, training requirements, and funding mechanisms has impeded efforts to move GME further into ambulatory and community settings and has limited the expansion of the training pipeline.

To address these challenges, the Council on Graduate Medical Education (COGME) believes that GME needs to improve the value that the public receives for its investment

in GME. Training programs, teaching hospitals, accreditation organizations, state and federal governments, and other stakeholders need to partner to accelerate change in GME so that further investments are directly linked to the challenges of a changing population and health care delivery system.

Greater value in GME means a better targeting of public GME money and more effective training models. Better value will require change from within training programs, quasi-public accreditation organizations, professional leadership, new federal and state legislation and regulation, and new public funding. This report recommends a number of changes in GME that will improve the concordance of physician training and public needs, which will lead to better value in GME.

RECOMMENDATIONS

Recommendation 1: Funding for GME should increase and broaden beyond current sources to provide high quality, compassionate, and evidence-based care.

Recommendation 1.1: Congress should continue funding for current GME positions, while increasing funding for additional positions.

Recommendation 1.2: Congress should increase funding for new residency positions in order to graduate 3,000 more physicians per year.

Recommendation 1.3: Sources of funding in addition to Medicare (global or "all payer") should be examined.

Recommendation 2: GME funding should be prioritized to accelerate physician workforce alignment with population and health delivery needs.

Recommendation 2.1: Increases in GME funding should be directed toward the following high priority specialties:

- Family medicine
- Geriatrics
- General internal medicine
- General surgery
- High priority pediatric subspecialties
- Psychiatry

Recommendation 2.2: Increases in GME funding should be directed toward training programs that have a higher proportion of individuals continuing in one of the specialties noted in Recommendation 2.1 and locating within regions with relatively lower per capita supplies of physicians.

Recommendation 2.3: Increases in GME funding should prioritize training programs that have a particular emphasis on new competencies needed to meet the changing health care system.

Recommendation 3: Funding and accreditation efforts should work toward improving training efficiency.

Recommendation 3.1: Training funds should be used more efficiently by eliminating transitional post graduate year positions and excess preliminary non-categorical positions.

Recommendation 3.2: Accreditation and licensing organizations should permit flexibility in certain clinical training in the fourth year of medical school to be credited toward residency training.

Recommendation 4: Criteria for recruiting medical students, as well as GME training requirements, should be revised to align with development of a physician workforce that meets the health care needs of the populations served.

Recommendation 5: The clinical learning environments and curricula for undergraduate and GME training requirements should be revised to prepare a physician workforce capable of providing patient-centered, safe, and effective care.

Recommendation 5.1: The Accreditation Council for Graduate Medical Education (ACGME) and the American Osteopathic Association (AOA) Council on Osteopathic Postgraduate Training Institutions should evaluate sponsoring institutions' clinical learning environments to ensure that the Institute of Medicine (IOM) competencies of safe, timely, effective, efficient, equitable, and patient-centered care are being met.

Recommendation 5.2: Congress should direct the Secretary of Health and Human Services to support the development and dissemination of innovative faculty development programs to improve GME training across all specialties, and it should appropriate sufficient funds to carry out these activities.

Recommendation 5.3: Training institutions should use a portion of their GME funding to develop and support faculty to teach and assess the ACGME and AOA competencies, and the ACGME and AOA should evaluate these programs as part of the institutional accreditation process.

Recommendation 5.4: Decisions regarding successful completion of each phase of medical education should be based on a rigorous assessment of competence rather than solely on time spent in training.

Recommendation 6: The nation should invest in medical education research to improve the quality of GME and the competencies of our physician workforce.

Recommendation 6.1: IOM should develop a national agenda for ongoing medical education research that advances training toward meeting patient preferences and improving population health outcomes.

Recommendation 6.2: Congress should authorize and finance a National Institute for Health Professions Education to support innovative medical education research that improves both learner and patient-care outcomes.

BACKGROUND

This report addresses the nation's need for better value in GME. COGME believes that this greater value can be achieved through better targeting of public GME money and more effective training models.

The United States depends on an effective system of GME to ensure that its population is served by the world's best physician workforce. GME is a powerful determinant of physician competencies and the workforce size and specialty mix. GME also affects where physicians practice and the types of population they serve. While the professional development of physicians continues beyond residencies and fellowships, GME is singularly important in setting a physician's career course and in the direction of the health workforce as a whole. In turn, GME strongly influences the quality, quantity, and costs of the nation's health care.

GME is an essential public investment in tomorrow's health care system that furthers the nation's goal to attain the triple aims of better health, better health care, and lower costs.[1] The $13 billion per year invested in GME is a sizable amount, but still less than 1 percent of the $1.4 trillion of federal and state expenditures on health care.[2] The benefits of a well functioning system of GME are shared broadly by populations of every region and socio-economic class. GME also is closely tied to the national research infrastructure, providing essential training in research methods directly relevant to discovering new ways to keep patients healthy, diagnose and treat illness, and improve the delivery of care.

The role of public financing of GME has led to legitimate questions about the alignment of current training with the nation's changing population and delivery system. Until the Balanced Budget Act of 1997[3], universities, teaching hospitals, and other sponsoring institutions had a high degree of autonomy in choosing the number and type of new GME programs, as long as the programs were approved by the institution's residency accrediting organization. With accreditation, Medicare funds were assured. This led to a robust expansion of training positions, particularly in subspecialty programs, although

primary care grew as well. The Balanced Budget Act's imposition of a funding cap on the number of Medicare-funded positions slowed expansion, except under limited circumstances. Without additional funding, the number of training positions continued to grow slowly, but largely in subspecialties.[4] During this time of relative stasis in training positions, the population continued to grow and age. The need for growth in primary care, and in some other high priority specialties,[5] has not been met, and regional disparities in physician supply continue.[6]

Most importantly, innovations in clinical care have led to the need for physicians trained in new knowledge domains and skills. Specialty boards and training accreditation standards have not stood still,[7] but COGME[8,9] and other national committees have raised concerns about the pace and direction of change.[10-15] While the nation's health care system is experiencing a revolution in the concepts and delivery of health care, GME seems to lag behind, constrained by funding that is misaligned with national priorities, by inflexible accreditation systems, and by outdated licensing and certification requirements. Training programs also share responsibility, with some failing to lead change when opportunities are available.[15]

There has been a strong reluctance to meaningfully increase public funding for GME, even though there is a consensus that more training capacity is necessary, particularly within some specialties. In addition to the reluctance of Congress to increase spending for any purpose, other factors that may add to this inaction include: the lack of mechanisms to ensure that additional funds lead to better-trained physicians in high priority specialties who will practice where population needs are higher[16]; the relative cost of increasing the physician workforce compared to mid-level providers; and the lack of transparency in the utilization of indirect medical education funds.[14] Regardless of the reason, improving the value of GME can create a more effective health workforce for each dollar spent and demonstrate good stewardship of current funding so that there will be confidence in the benefits of new funds. COGME believes that more funds are needed, but recognizes that a larger training cohort would only change a small portion of the physician workforce

size and specialty mix. Improving the quality of training, however, could affect all newly trained physicians.

COGME believes that GME needs to accelerate its pace of change. Some of this will require congressional and state action. Other changes can be facilitated through leadership in the executive branch. Medical education and accreditation organizations will need to heighten their leadership roles. Even if all of these stakeholders act in a coordinated fashion, the fate of GME and the health workforce requires strong leadership from universities, teaching hospitals, and other sponsoring institutions and their faculty.

This report addresses the national need for better value in GME. COGME believes that this greater value can be achieved through better targeting of public GME money and more effective training models. The report recommendations support these goals and are more fully discussed below.

FUNDING RECOMMENDATIONS

The United States investment in medical education is exceedingly small compared to its other expenditures on health care. According to the recent Lancet Commission Report, the cost of these educational activities represents less than 1 percent of total health expenditures.[17] Added to the public investment is the enormous investment in personal time and debt incurred by individual trainees. Medical education begins with 4 years of medical school training after completing an undergraduate college degree. After graduation from medical school, physicians enter a GME program and complete 3 years to 7 years of residency training (e.g., internal medicine, pediatrics, general surgery, neurosurgery) before they can enter clinical practice. Further GME after completion of this residency, referred to as fellowship training, is required for some specialties (e.g., cardiologist, oncologist, pediatric surgeon). The duration of this fellowship training averages 2 years to 3 years, but may be more or less depending on subspecialty. Thus, the duration of medical training including medical school and residency, prior to entering clinical practice, is at least 7 years for primary care and more than 10 years for some subspecialties, following completion of an undergraduate degree.

Medical students in the United States must pay for their medical school training, and the cost of this training continues to grow twice as fast as the rate of inflation. In 2012, approximately 87 percent of all medical school graduates (e.g. Liaison Committee on Medical Education and Commission on Osteopathic College Accreditation accredited schools) had incurred debt, and the median debt of MD graduates was $170,000.[18] During graduate medical training, residents and fellows receive a salary from their training program.

Each year the federal government contributes approximately $9.5 billion dollars in Medicare funds and $2 billion dollars in Medicaid funds to residency programs to help pay for this training. Other federal sources include the Department of Veterans Affairs, the Department of Health and Human Services Health Resources and Services Administration (HRSA), and the Department of Defense. There are more than 115,000

residents in training in the United States; therefore federal support is approximately $100,000 per resident per year.

Financial support of GME is necessary to assure the continued supply of well-trained physicians required to improve the health and well-being of the U.S. population. Public funding of GME should encourage physician training that supports the IOM triple aims of better care, better health, and lower costs.[1] To achieve these aims, training will need to place a greater emphasis on competencies that are evidence-based, patient-centered, and more efficient. Training in important innovative delivery methods, such as telemedicine and team-based care, also needs to be included in the new curriculum.[19]

There are many positive attributes to the present system of GME, but it falls short in providing the necessary mix of medical and surgical specialties and the appropriate geographic distribution of physicians.[6,9,16] At the same time, the number of residency training positions will not be adequate to ensure a sufficient overall supply of physicians[20] needed to provide health care services for a growing population with higher levels of chronic illness. Increased access to care with expanding insurance under the Patient Protection and Affordable Care Act (ACA)[21] also will add to this need,[22] as will the relatively high proportion of physicians nearing retirement.[23] To increase the ability of physicians to successfully meet these needs, GME programs should modify their training so that physicians are prepared for an evolving health care environment, which will include community and team-based care provided by innovative delivery and reimbursement models.

COGME recognizes that GME must provide the highest quality experiences for residents while meeting the evolving needs of society. In this regard, there must be a general understanding of the value proposition for GME. Value represents the relationship between the cost of the educational enterprise in relation to the total number of physicians produced, the quality of their educational experiences, and the effectiveness with which they are prepared to practice in relation to the needs of patients and the general population.

Recommendation 1: Funding for GME should increase and broaden beyond current sources to provide high quality, compassionate, and evidence-based care.

Recommendation 1.1: Congress should continue funding for current GME positions, while increasing funding for additional positions.

Recommendation 1.2: Congress should increase funding for new residency positions in order to graduate 3,000 more physicians per year.

Recommendation 1.3: Sources of funding in addition to Medicare (global or "all-payer") should be examined.

COGME recommends that GME funding be continued, including a continuation of non-Medicare funds for the Children's Hospital GME Program and HRSA's Teaching Health Center GME program, which is due to expire in 2015. COGME also recommends that training be expanded and prioritized to meet specific needs of a U.S. population that is growing and aging as an increasing proportion of physicians reach retirement age. An expansion of GME training is supported by numerous studies and previous recommendations by diverse groups. Presently the United States has 219.5 physicians per 100,000 population, placing it 28th in rank of member countries of the Organisation for Economic Co-operation and Development.[23] An increase in funded training positions has been recommended by the Macy Foundation,[10] the American Medical Association,[24] the Council of Medical Specialty Societies,[25] the Association of American Medical Colleges,[26] the American Association of Colleges of Osteopathic Medicine,[27] the ACGME,[28] and Senate Bill No. 1627 (112th Congress).[29] In a November 2011 letter to Congress, COGME previously recommended an increase of funding for 3,000 additional entry level training positions, which would require additional funding directed to areas listed below in Recommendation 2.[5] The 19th COGME report also recommended an increase of 15 percent, which is close to this figure.[8]

GME funding is derived from a variety of sources. Medicare is the largest supporter through direct medical education (DME) and indirect medical education (IME) funding. In 2010, total Medicare support was approximately $9.5 billion, divided between $3.0

billion for DME and $6.5 billion for IME. DME pays for the salaries and benefits of residents, the salaries and benefits of faculty who supervise the residents, other direct costs, and some institutional overhead. IME is provided to compensate teaching hospitals for the relatively higher costs that are attributable to the involvement of residents in patient care and the severity of illness of patients requiring specialized services available only in teaching hospitals. [30] IME funding recognizes "that the mere presence of interns and residents in an institution puts extra demands on other staff and leads to the existence of higher staffing levels. The process of [GME] results in very intensive treatment regimens. There is no question that hospitals with teaching programs have higher patient care costs than hospitals without."[31]

COGME does not agree with the Medicare Payment Advisory Commission that "the indirect medical education (IME) payments above the empirically justified amount should be removed from the IME adjustment and that sum would be used to fund the new performance based GME program."[14] Instead, we recommend overall funding for GME should be maintained and additional positions should be funded. A portion of funds provided for IME should reward training innovations that reflect society's needs for physicians who can practice effectively in the changing health care environment. This will require competency in cost-effective health care delivery teams, interprofessional education, coordinated care, and other attributes essential to improving access to care that is patient-centered, evidence-based, and improves patient safety and clinical effectiveness. Training in non-hospital based outpatient and office-based practices needs to be incorporated into any new GME approach to reflect the shift of medical care to outpatient settings.

We recommend that 10 percent of IME funding be contingent upon meeting these objectives. If implemented successfully over a 3-year period, the proportion of IME funds tied to performance could increase to 20 percent over a subsequent period of time. Performance should be correlated with a series of standards for each program or funded on a competitive basis to be determined by the governing bodies, such as the ACGME and the AOA. One example of training innovation that could be used to determine IME

rewards is the Milestone Project, a partnership between the ACGME and the American Board of Medical Specialties (ABMS).[32] The American College of Osteopathic Internists and the AOA Council of Osteopathic Postdoctoral Training has developed a similar milestone-based competency model of training and assessment.[33]

Medicare should not be the sole provider of funding for the expansion of GME positions. The Department of Veterans Affairs, the Department of Defense, and individual states, which presently provide 35 percent of funds, should also increase funding. Medicaid programs supported GME programs in 42 states and the District of Columbia (DC) in 2009 with a total of $3.78 billion. This was a significant decline from 48 states and DC in 2005, although the total Medicaid payment rose from $3.18 billion (nominal dollars). Henderson notes that nine[34] other states were considering ending Medicaid payments for GME. Three states, Illinois, Massachusetts, and Texas, which rank in the top 10 in number of teaching hospitals and medical residents, provide no Medicaid payments for GME.[34] HRSA currently provides funding for 44 teaching health center programs, an important innovation in primary care training, but this funding will end in 2015. The Department of Veterans Affairs, which is the largest single system sponsoring GME in the country, is estimated to spend more than $500 million annually for GME[35], and some states and local governments provide a small amount of support outside of the Medicaid program.

Teaching hospitals also provide financial support for GME. This includes the difference between what Medicare or Medicaid pays and the actual costs, which vary from hospital to hospital. Furthermore, while the 1997 Balanced Budget Act[3] capped the number of positions supported by Medicare at the level of 1996 funding, with few exceptions, medical centers have paid for additional positions.

Medical school practice plans and physician groups associated with teaching hospitals support a number of GME positions. This is essential because Medicare limits its support for training beyond the years required for a resident's initial board certification in his or her first specialty (not to exceed five years) to 50 percent of training cost. In many cases,

the remaining 50 percent is supported by faculty practice plans.[36] This is one of the reasons that shortages exist in pediatric subspecialties (e.g., fewer than 1 pediatric developmental or behavioral specialist per 247,000 children) because, although Medicare supports general pediatric residency training, further training in the pediatric medical subspecialties must be supported by other funds.

A number of proposals have been advanced to develop an "all-payer" approach to GME support through an assessment of a percentage of all health insurance premiums. In 2001, Senators Reed, Clinton, and Schumer introduced the Medical Trust Fund Act of 2001,[37] calling for a 1.5 percent assessment. Other bills have suggested a 1 percent assessment.[38] Income from such assessments was estimated to produce as much as $4 billion at that time. More recently, other organizations have proposed an "all payers" (i.e., funding from non-Medicare insurers, such as commercial plans) approach to GME funding.[13]

An all-payer system could be tied to the methodology of the ACA, which provides for a minimum medical loss ratio (MLR). Insurers who do not achieve specific MLRs for given classifications of insured populations must rebate the difference between performances and target MLRs to policyholders. A GME assessment could count towards the MLR. Given the size of the insurance industry, as little as 0.25 percent to 0.5 percent would provide significant new support to GME education.

Implementation of the ACA will be associated with significant increases in Medicaid support to states that elect to implement Medicaid expansion. This offers opportunities for states to increase their commitment to GME and for states to restore previous funding cuts. Such increases in Medicaid support would decrease the anticipated workforce shortages caused by the large number of newly insured patients, and would particularly increase funding in states with higher numbers of newly Medicaid-insured patients.

With increasing pressure to "bend the cost curve," hospitals may elect to decrease their support of GME. The financial pressure on hospitals increases the importance of stable public funding.

Recommendation 2: GME funding should be prioritized to accelerate physician workforce alignment with population and health delivery needs.

Recommendation 2.1: Increases in GME funding should be directed toward the following high priority specialties:

- Family medicine
- Geriatrics
- General internal medicine
- General surgery
- High priority pediatric subspecialties
- Psychiatry

COGME believes that GME expansion should specifically address the current shortcomings of the physician workforce in regard to the relative need for different medical specialties. New incentives need to be established to encourage entry into these specialties, through preferential funding of new GME positions. The list of high priority specialties will change over time. The HRSA Center for Health Workforce Analysis and health services researchers should continue to monitor the need for physicians by specialty.

Recommendation 2.2: Increases in GME funding should be directed toward training programs that have a higher proportion of individuals continuing in one of the specialties noted in Recommendation 2.1 and locating within regions with relatively lower per capita supplies of physicians.

Increasing GME funding must be coupled with payment and health care delivery reform that reflects national needs for high priority specialties and practice location in traditionally less desirable communities. Incentives toward improving the specialty mix and the geographic distribution of physician supply are essential. Prioritization of funding to higher need specialties will lead to dependable incremental change in the GME pipeline and, in turn, the physician workforce. Similar incentives will also help reduce the

geographic variation in physician supply. COGME recommends that these incentives be directed toward training programs whose graduates are more likely to practice in lower supply regions, including the many regions with low supply that are not designated shortage areas.[6] This will necessitate a process for evaluating the practice location of program graduates that consider the number of physicians per capita in the geographical area where graduates choose to practice.

COGME recommends this approach rather than directing funds toward areas with low medical resident-to-population ratios. There are many regions of the country with a high per capita physician supply but a relatively low ratio of residents to population. Maine and Oregon, for example, have below average residency positions but above average physicians per capita. The problem of improving geographic distribution is also complicated by physician mobility. There are, for example, states like New Mexico and Iowa with excellent GME training that lose a significant proportion of graduates to other states.[39]

> **Recommendation 2.3:** Increases in GME funding should prioritize training programs that have a particular emphasis on new competencies needed to meet the changing health care system.

Linking training emphasis to funding will accelerate the pace of change in GME training. Priorities are discussed in greater detail later in this report and include 1) training in a variety of community settings, 2) treating diverse populations, and 3) emphasizing team-based care, care coordination, telemedicine, and efficient care provision.

Recommendation 3: Funding and accreditation efforts should work toward improving training efficiency.

> **Recommendation 3.1:** Training funds should be used more efficiently by eliminating transitional post graduate year positions and excess preliminary non-categorical positions.

Transitional GME positions (clinical base years) are required by some specialties, such as ophthalmology, anesthesiology, and dermatology. These training years are insufficiently focused and only require six months of patient care. This training should be incorporated into the primary specialties. These positions should be reallocated to existing or new residency programs that meet the objectives outlined in the preceding recommendations. Because the attrition rate from residencies can approach 15 percent, some preliminary positions will still be needed to replace leaving residents."[40]

> **Recommendation 3.2:** Accreditation and licensing organizations should permit flexibility in certain clinical training in the fourth year of medical school to be credited toward residency training.

Residents should be given credit for clinical experiences completed in the fourth year of medical school. This should be coupled with changes in GME. During residency, completion of training could be based on an assessment of competency rather than the completion of a predetermined duration of training. Additionally, the efficacy and efficiency of skill development for an intended career practice could be maximized by eliminating a "one size fits all" mentality for residency training by individualizing training curricula to match the career goals of the trainee. These changes would require changes in ACGME policies and in state licensing board procedures. [41] Also, careful reassessment of accreditation standards for individual programs, which could be designed to streamline such programs without compromising quality, would be necessary.

TRAINING RECOMMENDATIONS

The ACGME recognizes and certifies nearly 9,000 residency training programs in the United States, as well as fellowship training programs in many subspecialties. The ACGME accreditation standards address curriculum, learning environment, patient safety, quality improvement, resident supervision, and other key aspects of GME. A little over a decade ago, the ACGME, in partnership with the ABMS, the parent organization of specialty boards that certify individual trainees, adopted what would become known as the ACGME competencies and the ACGME outcome project.[42] One purpose of this project was to broaden the scope of education and training from the traditional focus on patient care and medical knowledge to additional domains of competence: professionalism, interpersonal and communication skills, practice-based learning, and improvement and systems-based practice. A second purpose was to shift GME focus from the structure and process of training (e.g., how much time is spent learning cardiology and who teaches it) to a focus on the outcomes of training (e.g., whether a physician is able to take care of patients who present with common cardiac problems). This focus on outcomes and the ability of the learner to demonstrate competence in achieving them is an attempt to rejuvenate competency-based medical education (CBME), a movement that failed in the 1980s likely because of the complexities of assessing competencies.[43] History may have repeated itself were it not for regulatory bodies such as the ACGME and the member boards of the ABMS, as well as professional associations, requiring and supporting the adoption of CBME.[44,45]

In a parallel manner, the AOA, through its educational councils, accredits more than a thousand osteopathic GME programs that include the spectrum of core disciplines and many subspecialty fellowships. They conform to osteopathic competency domains focusing on osteopathic philosophy principles and manipulative treatment, medical knowledge and its application to medical practice, patient care, interpersonal and communication skills, professionalism, practice-based learning and improvement, and system-based osteopathic medical practice. Several osteopathic organizations, including

the AOA's Bureau of Osteopathic Specialists, which certifies osteopathic physicians post-residency, have incorporated these competencies into the examination processes.

The most important guiding principle of CBME, highlighted in the Lancet Commission Report, is that it is driven by the needs of the populations we care for and the systems in which we deliver care.[17] The starting point for CBME is determining what a physician needs to learn (knowledge, skills, and attitudes) to be able to provide safe and effective care to the population of patients served and how to accomplish this in the context of the health care delivery system in which the physician works. This is in contrast to the structure and process system, in which the curriculum is driven by a consensus of expert opinion on what must be learned. Recognition of this pivotal point in medical education history should be an impetus for future public and private support. In the words of Paul Batalden, "every system is perfectly designed to get the results that it gets."[46] Further redesign of GME is needed to attain the results we want – the world's best physician workforce leading health system reform and ready to care for tomorrow's patients.

Recommendation 4: Criteria for recruiting medical students, as well as GME training requirements, should be revised to align with development of a physician workforce that meets the health care needs of the populations served.

Improving efficacy and efficiency in training begins with the recruitment of a diverse group of medical students so that they will be well positioned to care for the varied patient populations we serve. In addition, recruitment needs to target students with the necessary personal attributes essential to providing patient-centered care. Achieving these goals requires changes in the interview process as well as a willingness to accept students from a variety of educational backgrounds. For example, Eva and associates have demonstrated a novel approach to medical school admissions utilizing the admissions Objective Structured Clinical Examination concept or "Multiple Mini Interviews" to identify those students with desirable personal attributes for successful medical practice.[47] The Association of American Medical Colleges (AAMC) initiative on holistic review also focuses on experience and competencies beyond knowledge. In addition, the

new Medical College Admission Test will add a focus on social and behavioral sciences as well as an emphasis on reasoning skills, targeting some of the competencies critical to communication, professionalism, and practice-based learning and improvement.[48]

Recommendation 5: The clinical learning environments and curricula for undergraduate and GME training requirements should be revised to prepare a physician workforce capable of providing patient-centered, safe, and effective care.

Recommendation 5.1: The ACGME and the AOA Council on Osteopathic Postgraduate Training Institutions should evaluate sponsoring institutions' clinical learning environments to ensure that the IOM competencies of safe, timely, effective, efficient, equitable, and patient-centered care are being met.

The quality of care that is delivered in the clinical learning environment where one's training heralds the quality of care that will be provided by the trainee years later in other care delivery environments. Asche et al retrospectively analyzed deliveries in New York and Florida between the years 1992 and 2007. Using nine measures of maternal complications, they found that obstetricians from training programs that were in the bottom quintile for risk-standardized major maternal complications had an adjusted complication rate that was one-third higher than those from programs in the top quintile.[49] This paper suggests that the clinical environment in which one trains impacts the quality of the training experience and, thus, the quality of care provided by the trainee over time. The Next Accreditation System (NAS) of the ACGME will include institutional site visits to focus on quality and safety in the learning environment. Review of patient care outcomes should be included in this system.[7]

As part of the approach to examining learning environments, the traditional block rotation of clinical experiences in medical school and residency may not always be the best method for developing patient and team relationships that are critical to professional formation.[50] Ogur and colleagues compared medical students participating in traditional block clerkships, including internal medicine and pediatrics, with a group of students participating in a year-long integrated clerkship experience where they provided

longitudinal care to patients under the supervision of a consistent group of faculty.[51] The study results demonstrated that students who participated in these integrated clerkships did not experience loss of idealism that occurs commonly in students engaged in traditional block clerkship experiences. Similar models of nontraditional curriculum should be tested in other areas.

An important outcome of the learning environment is the ability to deliver culturally effective health care (CEHC). This can be defined as the delivery of care within the context of appropriate physician knowledge, understanding, and appreciation of all cultural distinctions. CEHC is a central aspect of patient-centered care. GME training should include training in CEHC because physicians must be able to interact effectively and respectfully with patients who have a cultural background that is different from theirs to optimize the health status of their patients.

GME, as well as patient care, needs to integrate information technology into care delivery by creating patient registries. The data generated from these registries will allow physicians to apply quality improvement methodologies to enhance care quality and outcomes for the populations of patients they serve. Quality and safety in the learning environment also will be impacted by the ACGME's NAS when it is implemented in 2013. Institutional site visits, which will be part of the NAS, are designed to review the quality and safety of training programs' learning environments every 18 months.[7]

Recommendation 5.2: Congress should direct the Secretary of Health and Human Services to support the development and dissemination of innovative faculty development programs to improve GME training across all specialties, and it should appropriate sufficient funds to carry out these activities.

Recommendation 5.3: Training institutions should use a portion of their GME funding to develop and support faculty to teach and assess the ACGME competencies, and the ACGME should evaluate these programs as part of the institutional accreditation process.

Developing competent faculty who have both the skills and time to teach and assess students and residents is a rate-limiting step in the realization of CBME. Faculty development should address best practices from the science of learning to provide didactics combined with experiential learning and assessment methods aligned with desired learning outcomes.[50,52] Assessment of learners' competence is predicated on directly observing learners in authentic clinical settings as they care for patients. Such faculty must have a shared vision of what behaviors to look for and how they correlate with expected performance along a developmental continuum. A national effort to train faculty with these skills is needed if we hope to attain this goal. We should begin to develop these abilities during residency and fellowship training. This would ensure that as residents transition into practice, they have some baseline skills in pedagogy and assessment to prepare them for their educator roles.

The greatest challenge to faculty participation in teaching and faculty development is the growing expectation of higher clinical volumes and the ever-present need for research dollars to support protected time for scholarly work. The Carnegie Report states, "with increasing pressure for clinical productivity, time to teach is compromised. These circumstances are unacceptable; teaching must be supported."[11]

> **Recommendation 5.4:** Decisions regarding successful completion of each phase of medical education should be based on a rigorous assessment of competence rather than solely on time spent in training.

A major issue in the GME community is that of time versus competence in determining the duration of education and training. Regulatory bodies that mandate and endorse CBME must be willing to embrace its foundational element, that the achievement of competence, rather than the passage of time, dictates transition points along the education, training, and practice continuum. Medical schools must be willing to re-examine curricula and eliminate outdated curricular traditions that no longer serve the goal of educating based on population health needs. Sponsoring institutions must embed

training in service and experiential learning but not drive training by service requirements.

New duty hour regulations were developed to address critical issues such as patient and learner safety, as well as more humane training experiences, but may adversely impact the resident's ability to achieve competence and also may adversely affect patient safety.[53,54] For example, more frequent "handovers" of patients caused by work hour limitations is a potential source of medical errors and may decrease the trainees patient care experience. There is also a concern that learners will not be able to achieve desired outcomes of training that requires clinical time. One solution to reconcile the need to accomplish desired training outcomes with fewer hours is to improve the efficacy and efficiency of the education and training.

Recommendation 6: The nation should invest in medical education research to improve the quality of GME and the competencies of our physician workforce.

Recommendation 6.1: IOM should develop a national agenda for ongoing medical education research that advances training toward meeting patient preferences and improving population health outcomes.

Recommendation 6.2: Congress should authorize and finance a National Institute for Health Professions Education to support innovative medical education research that improves both learner and patient-care outcomes.

The ACGME will introduce the NAS in 2013 and all GME programs accredited by ACGME will enter this new system by the end of 2014.[7] The intent of this system is to put more emphasis on outcome measures and less on process measures. As the ACGME shifts to outcome measures, programs meeting expectations will be given increased flexibility to design training programs aimed to achieve those outcomes. This flexibility will allow for innovation in training models and the emergence of the best practices from the field. There is also a need to develop research on educational innovation to identify and test new training methods.

The Report of the Blue Ribbon Commission for the Advancement of Osteopathic Medical Education entitled "Building the Future: Educating the 21st Century Physician" has just been released by the American Osteopathic Association and the American Association of Colleges of Osteopathic Medicine with financial support from the Macy Foundation. The Commission report outlines 11 new competencies and 11 attributes for the 21st Century physician that should be taught and assessed in a "New Pathway" competency-based educational model. The principles articulated will result in a board-eligible, community-practice-ready physician in as little as 5 years (with the medical school portion likely completed in a competency-based assessment 3-year model). These principles also require a restructured competency-based community-first GME experience. Additional specialty training beyond community care qualification is likely for some learners. While community primary care practice is the goal, the Commission noted that "As a profession, we would prepare better specialists if all physicians had a stronger foundation in primary care and population health."[55]

A recent report from the Macy Foundation states, "To best leverage the large public investment in medical education for the greatest good to society a 'National Institute of Health Professions Education' should be established and charged with coordinating, prioritizing, and funding research on health professions education, with a substantial focus on GME."[10] This recommendation lays out the imperative for a national focus on medical education research and funding.

A similar call to innovation in medical education appeared in a November 16, 2011, letter to Congress.[5] In this letter, COGME recommended that the AAMC and the American Association of Colleges of Osteopathic Medicine jointly convene to propose a comprehensive review and development of new approaches for medical education and training in the United States. These would include many of the areas we have recommended in this report.

Despite the call for innovation in medical education, there has been limited response from the medical education community to address the Macy Report or the letter from COGME

to Congress, perhaps due to a lack of funding and time to develop these innovations. COGME believes there is a critical need for a medical education research agenda based on two guiding principles. The first is that educational research requires that results go beyond whether an intervention worked or not, but, rather, examines why it worked or did not work, within the context of local programs and learning environments.[56] The second is that medical education research is similar to the work of quality improvement in that both target better outcomes for patients. Faculty must strive to understand not only the impact of educational interventions on their learners but, also, the impact on the patients for whom they provide care. Furthermore, partnerships with quality improvement experts will help to create robust methods for testing innovations to target behavioral change in physicians that will improve the care of their patients.[57]

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