Graduate Medical Education That Meets the Nation's Health Needs

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That Meets the Nation's Health Needs

Committee on the Governance and Financing of
Graduate Medical Education

Board on Health Care Services

Jill Eden, Donald Berwick, and Gail Wilensky, *Editors*

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"Knowing is not enough; we must apply.
Willing is not enough; we must do."
—Goethe

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This report has been reviewed in draft form by individuals chosen for their diverse perspectives and technical expertise, in accordance with procedures approved by the National Research Council's Report Review Committee. The purpose of this independent review is to provide candid and critical comments that will assist the institution in making its published report as sound as possible and to ensure that the report meets institutional standards for objectivity, evidence, and responsiveness to the study charge. The review comments and draft manuscript remain confidential to protect the integrity of the deliberative process. We wish to thank the following individuals for their review of this report:

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Foreword

As the U.S. population ages and diversifies and the Affordable Care Act extends health coverage to more Americans than ever before, it has never been more critical for the nation's graduate medical education (GME) system to produce a physician workforce that meets the evolving health needs of the population.

For decades, Medicare has been the dominant funder of GME programs—contributing almost $10 billion in fiscal year 2012—and this funding, along with support from the Department of Veterans Affairs and the Health Resources and Services Administration, has been extremely valuable to the successful function of teaching hospitals across the country. However, many studies have shown that the current GME program does not produce adequate numbers of physicians prepared to work in needed specialties or geographic areas. Nor does it train physicians to practice in the community-based settings where most Americans seek care. Perhaps most critical, it lacks the oversight and infrastructure to track outcomes, reward performance, and respond nimbly to emerging challenges.

In 2012, an Institute of Medicine (IOM) committee was formed—with the support of 12 private foundations and backing from 11 U.S. senators—to analyze the governance and financing of the GME system. The 21 members of the committee who authored this report brought a range of experience in GME and education for other health professions, academic health centers, clinical medicine, health care financing and administration, and research, among others. I thank this eminent and diverse group of individuals for their contributions to this important task. In particular, on behalf of the IOM, I extend my gratitude to the committee co-chairs,

Donald Berwick and Gail Wilensky, and study director, Jill Eden, as well as her staff, for their leadership and dedication throughout the study process.

The committee's report, *Graduate Medical Education That Meets the Nation's Health Needs*, proposes significant revisions to rectify current shortcomings and create a GME system with greater transparency, accountability, strategic direction, and capacity to innovate. The report adds an important new dimension to the IOM's previous calls to action to improve the health system—beginning with the publication of *Crossing the Quality Chasm* in 2001. I hope it will provide useful and principled guidance for policy makers and program administrators alike as we work toward a GME system that better contributes to achieving the nation's health goals.

Harvey V. Fineberg, M.D., Ph.D.
President, Institute of Medicine (July 2002-June 2014)

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Summary[1]

Since the creation of the Medicare and Medicaid programs in 1965, the public has provided tens of billions of dollars to fund graduate medical education (GME), the period of residency and fellowship that is provided to physicians after they receive an allopathic or osteopathic medical degree.[2] In 2012 alone, public tax dollars contributed more than $15 billion to support residency training, with more than 90 percent coming from the Medicare and Medicaid programs (an estimated $9.7 billion and $3.9 billion, respectively). This funding is essentially guaranteed—regardless of whether the funded programs reflect local, regional, or national health care priorities. The scale of government support for this phase of physician education is unlike that given to any other profession in the nation. The length of postgraduate training for physicians is also unique among the professions: Board certification in a specialty typically requires 3 to 7 years of training, or longer in some subspecialties.

The United States has a robust GME system, one emulated by many other nations, with significant capacity to produce a high-quality physician workforce. Yet, in recent decades, the need for improvements to the GME system has been highlighted by blue ribbon panels, public- and private-sector commissions, provider groups, and Institute of Medicine (IOM) committees. Reports from these groups have indicated a range of concerns, including

[1] This summary does not include references. Citations appear in subsequent chapters.

[2] GME training and funding are also available in dentistry and podiatry. Consideration of GME for these professions was outside the scope of this study.

- a mismatch between the health needs of the population and specialty makeup of the physician workforce;
- persistent geographic maldistribution of physicians;
- insufficient diversity in the physician population;
- a gap between new physicians' knowledge and skills and the competencies required for current medical practice; and
- a lack of fiscal transparency.

In early 2012, the Josiah Macy Jr. Foundation asked the IOM to conduct an independent review of the goals, governance, and financing of the GME system. The Macy Foundation's funding spurred additional support from 11 private foundations (ABIM Foundation, Aetna Foundation, The California Endowment, California HealthCare Foundation, Commonwealth Fund, East Bay Community Foundation, Jewish Healthcare Foundation, Kaiser Permanente Institute for Health Policy, Missouri Foundation for Health, Robert Wood Johnson Foundation, and UnitedHealth Group Foundation), the U.S. Department of Veterans Affairs (VA), and the U.S. Health Resources and Services Administration (HRSA). Eleven U.S. senators, from both sides of the aisle, also expressed support.

The IOM Committee on the Governance and Financing of Graduate Medical Education was appointed in the summer of 2012. The committee's charge was to review GME financing and governance and to recommend policies for improving it, with particular emphasis on physician training (see Box S-1). The 21-member committee included experts from the full continuum of physician education (allopathic and osteopathic); nursing and

BOX S–1
Charge to the IOM Committee on the Governance and Financing of Graduate Medical Education

An ad hoc Institute of Medicine committee will develop a report with recommendations for policies to improve graduate medical education (GME), with an emphasis on the training of physicians. Specific attention will be given to increasing the capacity of the nation's clinical workforce that can deliver efficient and high-quality health care that will meet the needs of our diverse population. To that aim, in developing its recommendations the committee will consider the current financing and governance structures of GME; the residency pipeline; the geographic distribution of generalist and specialist clinicians; types of training sites; relevant federal statutes and regulations; and the respective roles of safety net providers, community health/teaching health centers, and academic health centers.

physician assistant education; management of health care systems; GME programs in teaching hospitals, VA facilities, rural areas, safety net institutions, and teaching health centers; Medicare and Medicaid GME financing; GME accreditation and certification; and health and labor economics. The committee also included a consumer representative and a recent GME graduate.

APPROACH TO THE STUDY

The committee recognized that improving the governance and financing of GME cannot, on its own, produce a high-value, high-performance health care system. Other factors, such as the way in which we pay for health care services, are far more significant. Nevertheless, the GME system is a powerful influence on the makeup, skills, and knowledge of the physician workforce.

Thus, the overarching question in this report is, *To what extent is the current GME system producing an appropriately balanced physician workforce ready to provide high-quality, patient-centered, and affordable health care?* Answering this question is a formidable challenge. As Figures S-1 and S-2 illustrate, the financing and governance of the GME enterprise are exceedingly complex, involving numerous public and private organizations with independent standards and processes. Teasing out the dynamics of the system is difficult because so few financial, programmatic, and outcomes data are available. In addition, the data that *are* available are often incomplete and not comparable.

Ideally, GME policy should be considered in the context of the educational continuum, including premedical education, "undergraduate" (medical school) education, the residency and fellowship training that comprises GME, and continuing medical education after entry into practice. Although a comprehensive review of the full arc of medical education is needed, it is beyond the scope of this study.

Goals for Developing Policy Recommendations for the Future of GME

The committee began its deliberations by considering several fundamental questions: Should the public continue to support GME? If yes, why should Medicare, a health insurance program for older adults and certain disabled persons, fund an educational program? Would other GME financing mechanisms be more appropriate?

The committee debated—at great length—the justification and rationale for federal funding of GME either through Medicare or other sources, given the lack of comparable federal financing for undergraduate medical education, other health care professions, or other areas important to society

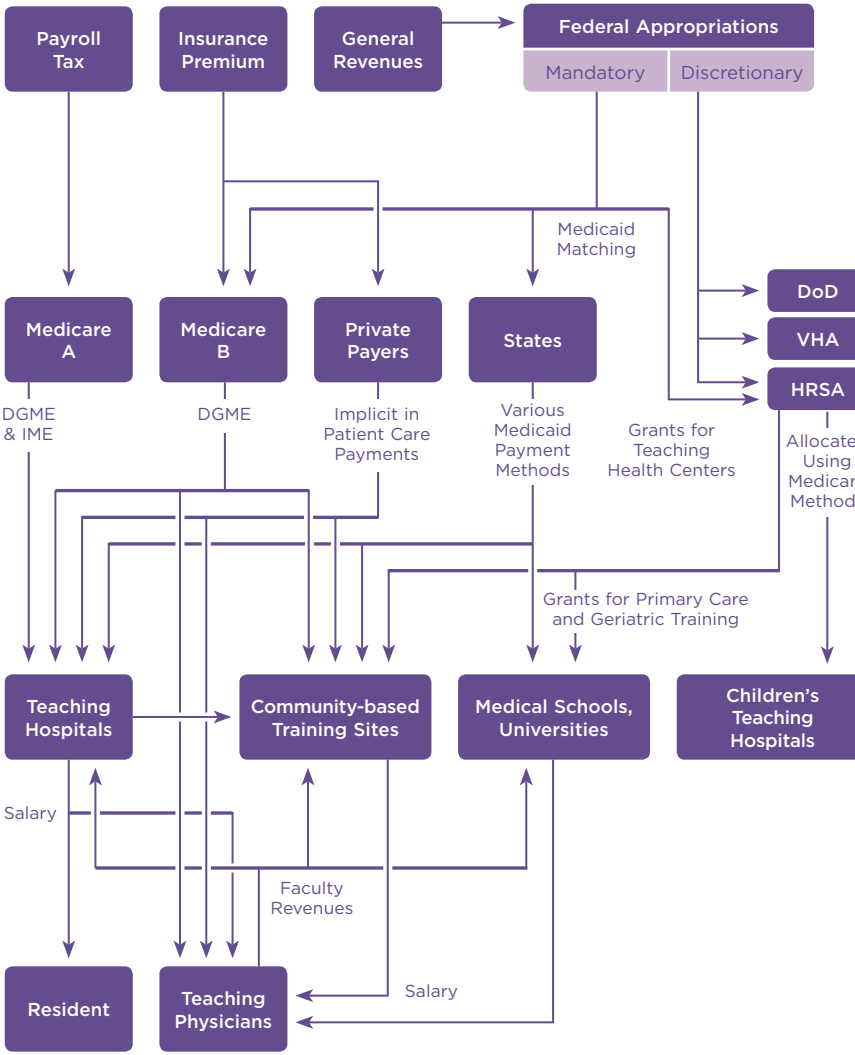

FIGURE S-1 Current flow of GME funds.

NOTE: DGME = direct graduate medical education; DoD = Department of Defense; HRSA = Health Resources and Services Administration; IME = indirect medical education.

SOURCE: Adapted from Wynn, 2012 (Committee of Interns and Residents Policy and Education Initiative White Paper, "Implementing the 2009 Institute of Medicine recommendations on resident physician work hours, supervision, and safety").

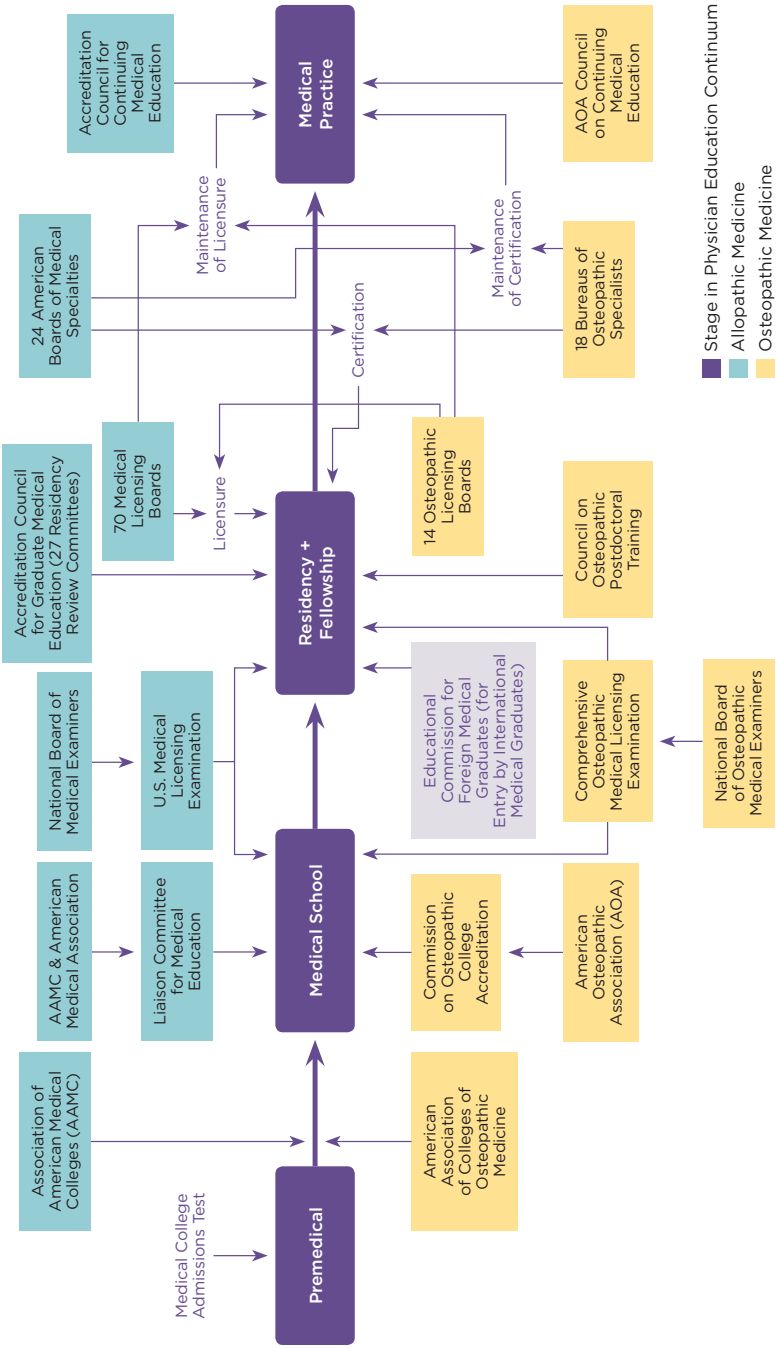

FIGURE S-2 Program accreditation and physician certification and licensure.

and in short supply. The committee recognized that both the public's health and the economy have an important stake in the effectiveness and availability of the physician workforce and the health workforce overall. Moreover, the health care delivery system is in the midst of significant change as it moves toward a focus on achieving the triple aim of improving individual care, improving population health, and lowering costs (an aim for which the IOM has consistently advocated).

The committee concluded that leveraging the public's GME investment for greater public benefit depends on secure and predictable funding. This goal is achievable by keeping federal GME support in Medicare, where it can continue as an entitlement program. Effective strategic investment is far less feasible in a federal program subject to annual discretionary funding. Thus, the committee decided to focus its recommendations on Medicare GME payment reforms (and their related governance), rather than on a broader array of policy alternatives, such as an all-payer GME system or a wholly new federal GME program.

As it began its assessment, the committee developed a set of goals (presented in Box S-2) to guide the development of its recommendations.

BOX S–2
IOM Committee's Goals for Developing Graduate Medical Education (GME) Policy Recommendations

1. Encourage production of a physician workforce better prepared to work in, help lead, and continually improve an evolving health care delivery system that can provide better individual care, better population health, and lower cost.
2. Encourage innovation in the structures, locations, and designs of GME programs to better achieve Goal #1.
3. Provide transparency and accountability of GME programs, with respect to the stewardship of public funding and the achievement of GME goals.
4. Clarify and strengthen public policy planning and oversight of GME with respect to the use of public funds and the achievement of goals for the investment of those funds.
5. Ensure rational, efficient, and effective use of public funds for GME in order to maximize the value of this public investment.
6. Mitigate unwanted and unintended negative effects of planned transitions in GME funding methods.

THE OUTCOMES OF CURRENT GME GOVERNANCE AND FINANCING

Physician Workforce

Although the committee was not charged with projecting the future demand for physicians, it reviewed recent projections and analyses of the capacity of the physician workforce to meet the nation's health needs. Some projections suggest imminent physician shortages that could prevent many people from getting needed health services. These analyses raise concerns that the rapid aging of the population and the expansion in health coverage resulting from the Patient Protection and Affordable Care Act[3] will fuel demand for physician services far beyond the current capacity. However, the underlying methodologies and assumptions about the future in these studies are problematic. They generally assume historical provider–patient ratios using existing technological supports and thus have limited relevance to future health care delivery systems or to the need for a more coordinated, affordable, and patient-centered health care system.

Physician workforce analyses that consider the potential impact of changes and improvements in health care delivery draw different conclusions. These studies suggest that an expanded primary care role for physician assistants and advanced practice registered nurses, redesign of care delivery, and the use of other innovations, such as telehealth and electronic communication, may ultimately lessen the demand for physicians despite the added pressures of the aging population and coverage expansions.

Some stakeholders and policy makers are pushing for significant increases in Medicare GME funding (via an increase in the cap on Medicare-funded residency positions) to ensure the production of more physicians. The available evidence, however, suggests that producing more physicians is not dependent on additional federal funding. The capacity of both medical schools and GME programs has grown considerably during the past decade. Between 2002 and 2012, overall enrollment in U.S. medical schools rose by nearly 28 percent, increasing from 80,180 to 102,498 students. In 2012, 117,717 physicians were in residency training—17.5 percent more than 10 years earlier.

Further increasing the number of physicians is unlikely to resolve workforce shortages in the regions of the country where shortages are most acute and is also unlikely to ensure a sufficient number of providers in all specialties and care settings. Although the GME system has been producing more physicians, it has not produced an increasing proportion of physicians who choose to practice primary care, to provide care to underserved popula-

[3] Public Law 111-148.

tions, or to locate in rural or other underserved areas. In addition, nearly all GME training occurs in hospitals—even for primary care residencies—in spite of the fact that most physicians will ultimately spend much of their careers in ambulatory, community-based settings.

There is worrisome evidence that newly trained physicians in some specialties have difficulty performing simple office-based procedures and managing routine conditions. In addition, medical educators report that GME curriculums lack sufficient emphasis on care coordination, team-based care, costs of care, health information technology, cultural competence, and quality improvement—competencies that are essential to contemporary medical practice. Recent surveys of residents and faculty suggest that they know little about the costs of diagnostic procedures and that residents feel unprepared to provide culturally competent care. It is noteworthy that the accrediting bodies for both allopathic and osteopathic medicine—the Accreditation Council for Graduate Medical Education and the American Osteopathic Association, respectively—are currently remodeling their accreditation systems, in part to better prepare physicians for practice in the rapidly evolving U.S. health care system. The financial incentives in GME funding should reflect similar objectives.

Unintended Consequences of Medicare GME Payment Methods

The financial underpinnings of the GME enterprise are complex and largely undocumented. The committee found few informative data on GME financing and its outcomes. Medicare has minimal reporting requirements; teaching hospitals are asked to report only the data elements that are needed to calculate GME payments. Reported data on the direct costs of GME are not complete, standardized, or audited. Medicaid GME funding is especially opaque. The revenue impact and cost savings associated with sponsoring residents are neither tracked nor reported, and they are rarely acknowledged in analyses of GME costs. As a result, the financial impact of residency training programs on teaching hospitals and other sponsoring organizations is not well understood.

Federal funding for GME includes both mandatory (Medicare and the federal Medicaid match) and discretionary appropriations (HRSA, VA, and U.S. Department of Defense). Most states support GME through their Medicaid programs, and some states provide other GME support through state-based programs. Hospitals, universities, physicians' organizations, and faculty practice plans also support residencies and fellowships. Private GME funding—philanthropy and gifts or grants from industry—is not well documented, but it may be significant. Private insurers support GME indirectly by paying higher rates to teaching hospitals.

The statutes governing Medicare's GME financing were developed at a

time when hospitals were the central—if not exclusive—site for physician training. Medicare GME payment rules continue to reflect that era. GME monies are distributed directly and primarily to teaching hospitals, which in turn have fiduciary control over the funds. There are two independent Medicare funding streams:

1. Direct graduate medical education (DGME) payments (based on costs in 1984-1985), intended to cover the salaries and benefits of residents and faculty and certain other costs; and
2. An indirect medical education (IME) adjustment to Medicare prospective payment system (PPS) inpatient rates, aimed at helping to defray additional costs of providing patient care thought to be associated with sponsoring residency programs.

Both funding streams are directly tied to a hospital's volume of Medicare inpatients. In 2012, IME accounted for $6.8 billion, or 70.8 percent, of total Medicare GME payments to teaching hospitals. DGME payments totaled $2.8 billion, or 29.2 percent.

In 1997, Congress capped the number of Medicare-supported physician training slots. Hospitals may add residents beyond the cap but cannot receive additional Medicare payments for those trainees. The cap is equal to each hospital's number of residents in 1996—essentially freezing the geographic distribution of Medicare-supported residencies without regard for future changes in local or regional health workforce priorities or the geography and demography of the U.S. population. As a result, the highest density of Medicare-supported slots and Medicare GME funding remains in the Northeast.

By distributing funds directly to teaching hospitals, the Medicare payment system discourages physician training outside the hospital, in clinical settings where most health care is delivered. Linking GME payments to a hospital's Medicare inpatient volume systematically disadvantages children's hospitals, safety net hospitals, and other institutions that care for non-elderly patients. Non-clinical, population-based specialties, such as public health and preventive medicine, are similarly affected.

Stewardship of Public Funding

Common notions of good governance are based on the expectation that public programs have the capacity to ensure responsible stewardship of public funds, provide appropriate program oversight, and achieve defined program outcomes. Good governance also requires transparency—public access to information—to promote accountability. Because Medicare GME funding is formula-driven, the payments are essentially guaranteed

regardless of whether the funded trainees reflect local, national, or regional health needs. The system's only mechanism for ensuring accountability is the requirement that residency programs be accredited. The system does not yield useful data on program outcomes and performance. There is no mechanism for tying payments to the workforce needs of the health care delivery system. There is also no requirement that, after graduation from a Medicare- or Medicaid-supported residency program, physicians accept or provide services to Medicare or Medicaid patients.

RECOMMENDATIONS

Significant reforms are needed to ensure that the public's sizeable investment in GME is aligned with the health needs of the nation. Because the rules governing the Medicare GME financing system are rooted in statute, these recommended reforms, presented below, cannot occur without legislative action. The committee strongly urges Congress to amend Medicare law and regulation to begin the transition to a performance-based system of Medicare GME funding.

The committee's recommendations provide an initial roadmap for reforming the Medicare GME payment system and building an infrastructure to drive strategic investment in the nation's physician workforce. The recommendations call for substantial change in how Medicare GME funds are allocated and distributed.

As outlined below and detailed in Chapter 5, the committee proposes to maintain level GME funding from Medicare (updated for inflation), with funds separately distributed for two purposes: *operational* (supporting continuation of current GME programs) and *transformational* (supporting innovation and planning for the future). The relative amounts allocated for these purposes will need to shift over time. Transformational funds will support work to develop a foundation for a *performance-based GME payment methodology*, which represents a central aim of these recommendations.

The committee acknowledges that repurposing and redesigning GME funding will be disruptive for teaching hospitals and other GME sponsors accustomed to receiving Medicare GME monies in roughly the same way for nearly 50 years. Change cannot and should not occur overnight; training organizations will need to minimize disruption to patient care delivery, honor multiyear commitments to trainees, and renegotiate existing contractual arrangements with affiliated training organizations. The committee recommends a phased implementation over a 10-year period. The ongoing need for Medicare GME funding should then be reassessed. The committee's guidance for this transition is included in Chapter 5.

Although clearly far-reaching and a marked change from the status quo, the committee's recommendations are based on careful consideration

of available evidence on the outcomes and unintended consequences of the current GME financing system. The recommendations are also based on the fundamentals of good governance, particularly transparency and accountability to the public for program outcomes. The Centers for Medicare & Medicaid Services (CMS) has successfully accomplished major payment transitions before—during implementation of the Medicare PPS in the 1980s and the Medicare Resource-Based Relative Value Scale (RBRVS) payment system in the 1990s. Both the PPS and RBRVS reforms involved far greater percentages of Medicare spending.

Transforming Medicare's role in GME financing will be a complex undertaking requiring careful planning. The committee's recommendations outline objectives for the transition and provide building blocks for a reformed, value-based Medicare GME financing program. A well-resourced program infrastructure should be established quickly to formulate a more detailed roadmap than the one presented here.

Invest Strategically

At a time when all federal programs are under close scrutiny and the return on the public's investment in GME is poorly understood, the committee cannot support maintaining Medicare GME funding at the current level without establishing a path toward realignment of the program's incentives and a plan for documentation of outcomes. The continuation and appropriate level of funding should be reassessed after the implementation of these reforms.

RECOMMENDATION 1: Maintain Medicare graduate medical education (GME) support at the current aggregate amount (i.e., the total of indirect medical education and direct graduate medical education expenditures in an agreed-on base year, adjusted annually for inflation) while taking essential steps to modernize GME payment methods based on performance, to ensure program oversight and accountability, and to incentivize innovation in the content and financing of GME. The current Medicare GME payment system should be phased out.

Build an Infrastructure to Facilitate Strategic Investment

The committee urges Congress and the Secretary of the U.S. Department of Health and Human Services to take immediate steps to establish a two-part governance infrastructure for federal GME financing. Transforming Medicare GME financing will require an overarching policy-development and decision-making body and a separate operations center to administer GME payment reforms and solicit and manage demonstrations of new

GME payment models. A portion of current GME monies should be allocated to create and sustain these new entities. No additional public funds should be used.

RECOMMENDATION 2: Build a graduate medical education (GME) policy and financing infrastructure.

2a. Create a GME Policy Council in the Office of the Secretary of the U.S. Department of Health and Human Services. Council members should be appointed by the Secretary and provided with sufficient funding, staff, and technical resources to fulfill the responsibilities listed below:

- **Development and oversight of a strategic plan for Medicare GME financing;**
- **Research and policy development regarding the sufficiency, geographic distribution, and specialty configuration of the physician workforce;**
- **Development of future federal policies concerning the distribution and use of Medicare GME funds;**
- **Convening, coordinating, and promoting collaboration between and among federal agencies and private accreditation and certification organizations; and**
- **Provision of annual progress reports to Congress and the Executive Branch on the state of GME.**

2b. Establish a GME Center within the Centers for Medicare & Medicaid Services with the following responsibilities in accordance with and fully responsive to the ongoing guidance of the GME Policy Council:

- **Management of the operational aspects of GME Medicare funding;**
- **Management of the GME Transformation Fund (see Recommendation 3), including solicitation and oversight of demonstrations; and**
- **Data collection and detailed reporting to ensure transparency in the distribution and use of Medicare GME funds.**

Establish a Two-Part Medicare GME Fund

The committee recommends allocating Medicare GME funds to two distinct subsidiary funds:

1. A GME Operational Fund to distribute per-resident amount payments directly to GME sponsoring organizations for approved Medicare-eligible training slots. The fund would finance ongoing residency training activities sponsored by teaching hospitals, GME consortiums, medical schools and universities, freestanding children's hospitals, integrated health care delivery systems, community-based health centers, regional workforce consortiums, and other qualified entities that are accredited by the relevant organization. Under current rules, teaching hospitals sponsor nearly half (49.9 percent) of all residency programs, and slightly more than half of all residents (52.1 percent) train in programs sponsored by teaching hospitals.
2. A GME Transformation Fund to finance new training slots (including pediatric residents currently supported by the Children's Hospitals Graduate Medical Education program and other priority slots identified by the GME Policy Council), to create and maintain the new infrastructure, to ensure adequate technical support for new and existing GME sponsoring organizations, to sponsor development of GME performance metrics, to solicit and fund large-scale GME payment demonstrations and innovation pilots, and to support other priorities identified by the GME Policy Council.

RECOMMENDATION 3: Create one Medicare graduate medical education (GME) fund with two subsidiary funds:

3a. A *GME Operational Fund* to distribute ongoing support for residency training positions that are currently approved and funded.

3b. A *GME Transformation Fund* to finance initiatives to develop and evaluate innovative GME programs, to determine and validate appropriate GME performance measures, to pilot alternative GME payment methods, and to award new Medicare-funded GME training positions in priority disciplines and geographic areas.

The committee expects that the GME Transformation Fund will provide the single most important dynamic force for change. Box S-3 provides preliminary guidance for the fund's organization and ongoing operations. All GME sponsor organizations should be eligible to compete for both innovation grants and additional funding for new training positions.

BOX S–3
Catalyzing Innovation in GME: Parameters for the Institute of Medicine (IOM) Committee's Proposed Transformation Fund

One of the key elements of the IOM committee's recommendations is the creation of a graduate medical education (GME) Transformation Fund to finance demonstrations of innovative GME payment methods and other interventions to produce a physician workforce in sync with local, regional, and national health needs. All GME sponsor organizations should be eligible to compete for innovation grants. The committee recommends that the fund's organization and ongoing operations be based on the following principles.

- Goal of the program: to support physician and other health professional education toward achievement of the "triple aim," that is, improving the individual experience of care, improving the health of populations, and reducing the per-capita costs of care
- Four operational principles
  - Speed and efficiency
  - Measurability and evaluation
  - Sustainability
  - Scalability
- Identifying priority topics
  - Investigator- and program-initiated
  - Focus on national-, regional-, and state-level issues
- Potential questions for early Requests for Proposals
  - What are feasible and valid measures of training success?
  - What new models of financing might better achieve the triple aim?
    - Voucher systems?
    - Differential per-resident amounts?
    - Allowing institutions to bill third parties for certain residents' services?
  - What interventions work best to increase the racial and ethnic diversity of the physician workforce? To improve physicians' cultural competence?
  - What models of interprofessional training—including physician assistants, advanced practice registered nurses, and other clinicians—better prepare physicians for team-based practice and care delivery in community settings?
  - Should GME funds be used for advanced training in other disciplines, for example, physician assistants and advanced practice registered nurses?
  - How might training or training funding expand across the physician education continuum (from undergraduate to GME to continuing medical education) to maximize efficiency?
  - How might GME training programs be streamlined, for example, reducing training time through earlier specialization or other mechanisms?
- "Innovation innovation," that is, attention to scalability in projects to learn what is required to achieve innovation in real-world programs

Modernize Medicare GME Payment Methodology

The purchasing power of Medicare GME funding provides a significant opportunity for strategic investment in the physician workforce. The separate IME and DGME funding streams, however, present a formidable obstacle to taking advantage of this opportunity. Maintaining separate IME and DGME funding streams would hamper efforts to collect and report standardized data, to link payments with program outcomes, to reduce geographic inequities in GME payments, and to minimize administrative burden. Separate funding streams create unnecessary complexity, and there is no ongoing rationale for linking GME funding to Medicare patient volume because GME trainees and graduates care for all population groups. Finally, basing payment on historical allocations of DGME costs and training slots only prolongs the current inequities in the distribution of GME monies.

RECOMMENDATION 4: Modernize Medicare graduate medical education (GME) payment methodology.

- **4a. Replace the separate indirect medical education and direct GME funding streams with one payment to organizations sponsoring GME programs, based on a national per-resident amount (PRA) (with a geographic adjustment).**
- **4b. Set the PRA to equal the total value of the GME Operational Fund divided by the current number of full-time equivalent Medicare-funded training slots.**
- **4c. Redirect the funding stream so that GME operational funds are distributed directly to GME sponsoring organizations.**
- **4d. Implement performance-based payments using information from Transformation Fund pilot payments.**

Medicare's current GME payment mechanisms should be replaced with a method that provides a pathway to performance-based GME financing. This transition should be phased in and carefully planned under the guidance of the GME Policy Council, in consultation with the CMS GME Center and GME stakeholders. The Policy Council should ensure that its blueprint for the transition includes a rigorous strategy for evaluating its impact and making adjustments as needed.

Medicaid GME

Information on Medicaid GME programs is scarce, and on Medicaid GME funds flow, it is particularly opaque. The committee was not able to conduct an in-depth assessment of Medicaid-funded GME. Nevertheless,

as a multibillion-dollar public investment ($3.9 billion in fiscal year 2012), the public has the right to expect basic transparency and accountability in Medicaid GME funding. As Chapter 3 describes, there is little evidence that states use Medicaid GME funds to achieve policy objectives (despite concerns about physician shortages). The committee suggests that the GME Policy Council consider the extent to which it might advise the CMS Center for Medicaid and CHIP Services and the state Medicaid programs on introducing transparency in their GME programs.

RECOMMENDATION 5: Medicaid graduate medical education (GME) funding should remain at the state's discretion. However, Congress should mandate the same level of transparency and accountability in Medicaid GME as it will require under the changes in Medicare GME herein proposed.

CONCLUSION

The committee recommends that continued Medicare support for GME be contingent on its demonstrated value and contribution to the nation's health needs. Under the current terms of GME financing, there is a striking absence of transparency and accountability for producing the types of physicians that today's health care system requires. Moreover, newly trained physicians, who benefit from Medicare and Medicaid funding, have no obligation to practice in specialties and geographic areas where they are needed or to accept Medicare or Medicaid patients once they enter practice.

In conclusion, the committee recommends that Medicare GME funding be leveraged toward the achievement of national health care objectives. Continued federal funding should be delivered by a system that ensures transparency and accountability for producing a workforce suited to the needs of the health care system. The committee recognizes that reforming GME and its governance and financing cannot—on its own—produce a high-value, high-performance health care system. However, appropriate preparation of the physician workforce is an essential component of this transformation. The recommendations presented in this report provide a roadmap to this end.

1

Introduction

Abstract: *This chapter presents the objectives, scope, and context for this report and describes the approach that the Institute of Medicine Committee on the Governance and Financing of Graduate Medical Education (GME) used to undertake the study. The committee's charge was to examine the GME landscape and to recommend policies regarding GME governance and financing. The committee's deliberations were based on the central premise that a good system of GME is one that supports the nation's health and health care goals, as articulated in the "triple aim" of improving the individual experience of care, improving the health of populations, and reducing per capita costs of health care.*

Becoming a physician in the United States is a long and costly process. American taxpayers have helped support physician education for generations. With that support, the nation's teaching hospitals have been integral to the production of a physician workforce well prepared to enter clinical practice. Today, newly trained physicians enter practice with strong scientific underpinnings in the biological and physical sciences as well as supervised practical experience in delivering care and applying the knowledge and principles they have learned.

The federal government began funding residency training—graduate medical education (GME)—when it enacted the GI Bill through the Servicemen's Readjustment Act of 1944 (Ludmerer, 2012). In 1965, with the creation of the Medicare program, federal funding of GME became a statutory mandate. Today, annual federal spending on GME exceeds

$15 billion (Henderson, 2013; HRSA, 2013b). Many observers believe this investment should be more strategic and more effective (ACP, 2011; MedPAC, 2010; Spero et al., 2013; Weinstein, 2011).

For decades, blue ribbon panels, public- and private-sector commissions, provider groups, and Institute of Medicine (IOM) committees have been assembled to assess the GME system and to propose policies to facilitate its improvement (AAMC, 2012a; AMA Citizens Commission on Graduate Medical Education, 1966; Bipartisan Policy Center Health Project, 2013a; Coggeshall, 1965; COGME, 2007, 2010, 2013; Commonwealth Fund Commission on a High Performance Health System, 2006; IOM, 1989, 2003a,b, 2004, 2010; Ludmerer, 2012; Macy Study Group on Graduate Medical Education, 1980; MedPAC, 2010; Weinstein, 2011). The reports generated by these efforts have highlighted a range of problems: lack of accountability and transparency (Johns, 2010; MedPAC, 2010); a mismatch between the health care needs of the population and the increasing number of physician specialists (Cassel and Reuben, 2011; Detsky et al., 2012); persistent geographic maldistribution of physicians; the growing burden of medical school debt (GAO, 2009; Youngclaus and Fresne, 2012); the significant differences in the racial and ethnic makeup of the physician population compared to the patient population (Reschovsky and Boukus, 2010; Saha et al., 2008; Sullivan and Suez Mittman, 2010); and the gap between new physicians' knowledge, skills, and professional values and the competencies required for current medical practice (Cronenwett and Dzau, 2010; Crosson et al., 2011; IOM, 2003b, 2004; Weiss et al., 2013).

The impetus for this assessment of GME was two conferences sponsored by the Josiah Macy Jr. Foundation in 2010-2011, the first of which was jointly sponsored by the Association of Academic Health Centers (Johns, 2010; Weinstein, 2011). The conferences were designed to identify needed reforms to GME and suggest approaches for achieving them. The final conference proceedings included a recommendation that the IOM (or a similar body) conduct an independent external review of the goals, governance, and financing of the GME system (Weinstein, 2011). Subsequently, the Macy Foundation entered into a contract with the IOM for the review. Additional support to do this assessment came from 11 U.S. senators who expressed support in letters to the IOM.[1]

The initial and substantial financial support of the Macy Foundation catalyzed additional support for the IOM study from a wide range of sponsors from across the country. Ultimately, 12 private foundations, the Health

[1] The signatories to the letters were Senators Michael Bennet (D-CO), Mike Crapo (R-ID), Charles Grassley (R-IA), Bill Nelson (D-FL), Jack Reed (D-RI), Charles E. Schumer (D-NY), Mark Udall (D-CO), and Thomas Udall (D-NM) and former Senators Jeff Bingaman (D-NM), John Kerry (D-MA), and Jon Kyl (R-AZ). See Appendix B.

BOX 1-1
Study Sponsors

ABIM Foundation
Aetna Foundation
California Endowment
California HealthCare Foundation
The Commonwealth Fund
East Bay Community Foundation
Health Resources and Services Administration
Jewish Healthcare Foundation
Josiah Macy Jr. Foundation
Kaiser Permanente Institute for Health Policy
The Missouri Foundation for Health
Robert Wood Johnson Foundation
UnitedHealth Group Foundation
U.S. Department of Veterans Affairs

Resources and Services Administration (HRSA), and the U.S. Department of Veterans Affairs (VA) came forward to sponsor the study. Study sponsors are listed in Box 1-1.

This chapter provides background for the study, describes the scope of the inquiry, and presents the committee's conceptual framework and goals for this report.

SCOPE OF THE STUDY

The IOM Committee on the Governance and Financing of Graduate Medical Education was appointed in the summer of 2012 to conduct the study and prepare this report. The 21-member committee included experts in GME financing; residency training of allopathic and osteopathic physicians; undergraduate medical education; nursing and physician assistant education; management of health care systems; physician training in a variety of settings, including teaching hospitals, large academic medical centers, Veterans Health Administration (VHA) facilities, rural areas, safety net institutions, and teaching health centers; the Medicare and Medicaid programs; health and labor economics; and accreditation, licensure, and other regulation of physician training and practice. The committee also included a consumer representative and a recent graduate of residency training. Brief biographies of committee members are provided in Appendix D.

The charge to the committee is presented in Box 1-2. Ideally, GME policy should be considered in the context of the trainees' progress from undergraduate medical education through residency training and continu-

BOX 1–2
Charge to the IOM Committee on the Governance and Financing of Graduate Medical Education

An ad hoc Institute of Medicine committee will develop a report with recommendations for policies to improve graduate medical education (GME), with an emphasis on the training of physicians. Specific attention will be given to increasing the capacity of the nation's clinical workforce that can deliver efficient and high-quality health care that will meet the needs of our diverse population. To that aim, in developing its recommendations the committee will consider the current financing and governance structures of GME; the residency pipeline; the geographic distribution of generalist and specialist clinicians; types of training sites; relevant federal statutes and regulations; and the respective roles of safety net providers, community health/teaching health centers, and academic health centers.

ing medical education after entry into practice. Although a comprehensive review of the full continuum of medical education is needed, it is beyond the scope of this study. As the committee considered its approach to the study, the group discussed whether this report should focus on not only graduate training of physicians but also other health professionals, such as dentists, podiatrists, advanced practice registered nurses, and physician assistants. The committee decided to focus on the former. The statutory definition of GME does not include other clinicians except for podiatrists and dentists.[2] Podiatry and dentistry are outside the scope of the study.

BACKGROUND

This section provides a brief background on residency training and GME financing and governance. The subsequent chapters will review these topics in depth. See Table 1-1 for selected statistics on the GME pipeline, federal GME funding, and related data.

Continuum of Physician Education

The continuum of formal physician education begins with undergraduate medical education in an allopathic or osteopathic medical school (see Figure 1-1). U.S. medical schools confer the M.D. or D.O. degree. U.S. graduates with these degrees combine with some of the graduates of non-U.S. medical schools in competing for positions in U.S. GME, the period

[2] Consolidated Omnibus Budget Reconciliation Act of 1985, Public Law 99-272, 100 Stat. 82 (April 7, 1986).

TABLE 1-1 Selected GME Statistics

		Number
Pipeline to GME (2013)		
Allopathic and osteopathic medical schools		171
Allopathic and osteopathic medical school graduates		20,164
Available ACGME residency positions		29,171
Applicants for ACGME residency positions		34,355
• U.S. citizen international medical graduate (IMG) applicants		5,095
• Non-U.S. citizen IMG applicants		7,568
Available AOA residency positions		2,900
ACGME-accredited training programs (2013)		**9,265**
Initial residency period		4,084
Subspecialties		5,181
Number of AOA-accredited training programs (2012)		**1,015**
Internships		132
Residencies		883
Residents in ACGME programs (2013)		**117,717**
Initial residency period		97,155
Subspecialties		20,562
Residents in AOA programs (2012)		**11,020**
Internships		1,279
Residencies		9,741
Principal federal GME funders		
Medicare (2012)		$9.7 billion
Medicaid (2012)		$3.9 billion
Health Resources and Services Administration		$0.5 billion
Veterans Health Administration (VHA) (2012)		$1.4 billion
Trends in use of hospital services	1980	2010
Hospital days per 10,000 population	13,027.0	5,369.2
Hospital discharges per 10,000 population	1,744.5	1,125.1

NOTES: Medicare estimates provided via e-mail by Marc Hartstein, Director, Hospital and Ambulatory Policy Group, Center for Medicare, Centers for Medicare & Medicaid Services, September 4, 2013. VA estimates provided via e-mail by Barbara K. Chang, Director of Medical and Dental Education, VHA Office of Academic Affiliations, July 15, 2013. The 2010 hospital statistics are drawn from pooled 2009-2010 data. ACGME and AOA data include dually accredited programs.

SOURCE: AACOM, 2013; AAMC, 2012b; ACGME, 2013; Brotherton and Etzel, 2012; Henderson, 2013; National Center for Health Statistics, 2013; National Resident Matching Program, 2013.

called residency training. GME has evolved from an apprenticeship model to a curriculum-based education program—though learning is still predominantly based on resident participation in patient care, under supervision, with increasing independence through the course of training.

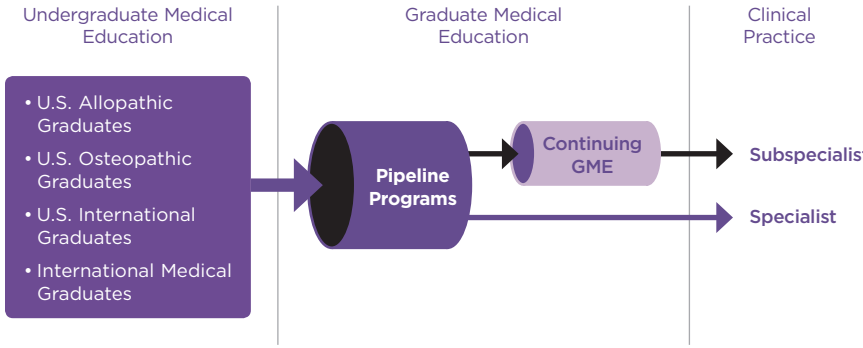

FIGURE 1-1 Continuum of physician education from undergraduate medical education to clinical practice.
SOURCE: ACGME, 2013.

Most residency programs are sponsored by and take place in large teaching hospitals and academic health centers. However, as health care services are increasingly provided in ambulatory and community-based settings, residency training is beginning to expand to non-hospital sites (University of Texas System and Lieberman, 2012). Based on the rapid evolution under way in health system delivery involving an increasing emphasis on non-hospital-based care, many experts recommend an acceleration of this transition (Fuchs, 2011).

Every state requires at least a year of residency training in the United States to receive an unrestricted license to practice medicine (FSMB, 2013), and some require 2 or 3 years. However, most physicians train beyond the minimum licensure requirement in order to become board certified in a "pipeline" specialty (i.e., those that lead to initial board certification) (see Box 1-3) (ACGME, 2013; AOA, 2013). The number of pipeline training positions determines the total number of physicians that the entire continuum can produce. For many years, the number of U.S. residency slots has been larger than the number of U.S. medical graduates, so residency programs were filled in part by graduates of non-U.S. medical schools (including both U.S. and non-U.S. citizens). Now, with growth in the number and size of medical schools, the number of U.S. medical graduates is beginning to more closely approximate the current number of residency slots (AAMC, 2013; COGME, 2013). In a recent survey conducted by the Association of American Medical Colleges (AAMC), 122 of 130 responding medical school deans reported some concern about the number of clinical training opportunities for their graduates (AAMC, 2013).

BOX 1–3
Pipeline Specialties

- Anesthesiology
- Dermatology
- Emergency medicine
- Family medicine
- Internal medicine
- Internal medicine/pediatrics
- Medical genetics
- Neurological surgery
- Neurology
- Nuclear medicine
- Obstetrics and gynecology
- Ophthalmology
- Orthopaedic surgery
- Otolaryngology
- Pathology—anatomic and clinical
- Pediatrics
- Physical medicine and rehabilitation
- Plastic surgery
- Plastic surgery—integrated
- Preventive medicine
- Psychiatry
- Radiation oncology
- Radiology—diagnostic
- Surgery
- Thoracic surgery—integrated
- Urology
- Vascular surgery—integrated

SOURCE: Adapted from ACGME, 2011.

Board certification in a pipeline specialty is increasingly required for credentialing[3] and typically takes 3 to 7 years. A substantial and increasing proportion of physicians choose to go on to subspecialty training after their initial board certification, in a variety of fields, such as cardiology or gastroenterology (subspecialties of internal medicine and pediatrics) (Brotherton and Etzel, 2012). In 2012, more than 117,000 residents were on duty in 9,265 allopathic residency programs across the country (ACGME, 2013). Of these, more than 20,500 (17.5 percent) were in subspecialty fellowships.

A Note on Terminology

In this report, the term "GME" is used to describe the period of residency and fellowship training that is provided to physicians after they receive an allopathic or osteopathic medical degree. The committee distinguishes among GME, the educational enterprise, and GME *funding*, the financing of GME, largely through the Medicare and Medicaid programs. This report uses the term "residency" to refer to the initial period of residency training required for board eligibility and fellowship training that may occur afterward. "Fellows" and "subspecialty residents" are physicians who have completed the requirements for eligibility for first board certification and are training in a related subspecialty. Unless otherwise

[3] Credentialing is a process used by third-party payers and health care organizations to evaluate the qualifications and practice history of a doctor.

specified, our discussion of GME and comments about physicians refer jointly to osteopathic and allopathic physicians.

As Box 1-4 describes, the term "primary care" is often used to include a variety of specialties, depending on the context.

BOX 1–4
Primary Care Specialties

The Institute of Medicine defines primary care not as a collection of specialties but as:

> *the provision of integrated, accessible health care services by clinicians who are accountable for addressing a large majority of personal health care needs, developing a sustained partnership with patients, and practicing in the context of family and community.*

However, in the context of graduate medical education, the term "primary care" typically refers to medical specialties. Federal agencies, for example, often describe primary care specialities as including family medicine, general internal medicine, and general pediatrics, as noted below. Sometimes obstetrics and gynecology (OB/GYN), psychiatry, and geriatrics are also considered (or formally designated) to be primary care specialties.

	Family Medicine	Internal Medicine (General)*	Pediatrics (General)	OB/GYN	Psychiatry (General)	Geriatrics
Government Accountability Office	X	X	X			
American Medical Association	X	X	X	X		
National Health Service Corps	X	X	X	X	X	X
Medicare GME	X	X	X	**	**	X
Affordable Care Act	X	X	X	X	X	X

*Internal medicine also includes internal medicine/family medicine and internal medicine/pediatrics.

**OB/GYN and psychiatry are considered primary care specialties by the Medicare graduate medical education program when the resident is the primary caregiver and the faculty physician sees the patient only in a consultative role.

SOURCES: GAO, 2009; HRSA, 2012; IOM, 1996.

GME Financing

Medicare is the single largest explicit contributor to GME ($9.7 billion in 2012), followed by Medicaid ($3.9 billion in 2012) (Henderson, 2013).[4] The VHA and HRSA are also important funders of GME, contributing an estimated $1.4 billion and $0.5 billion respectively (HRSA, 2013a). States, private insurers, and industry also provide support.

GME Governance

There is no single public or private entity that provides oversight of GME. Standards and program requirements—across the continuum of physician education—are the responsibility of a wide array of private organizations and government licensing agencies with sometimes overlapping interests and jurisdiction. These include the AAMC, Accreditation Council for Graduate Medical Education (ACGME), American Board of Medical Specialties, American Medical Association, American Osteopathic Association, Commission on Dental Accreditation, Council of Medical Specialty Societies, Council on Osteopathic Postgraduate Training, Council on Podiatric Education, Educational Commission for Foreign Medical Graduates, Residency Review Committees (delegated authority via ACGME), and state medical boards.

CONTEXT FOR THIS REPORT

This is a time of tremendous change and uncertainty in U.S. health care. Key provisions of the Patient Protection and Affordable Care Act (ACA)[5] are not yet implemented. Many health providers and policy makers worry that the Act's expansion of health insurance coverage to millions of Americans—combined with the aging of the population—will overwhelm the workforce we have. Some analysts have projected dramatic workforce shortages—especially for physicians—that could prevent many people from getting needed health services (AAMC, 2011, 2012a; Kirch et al., 2012; Petterson et al., 2012; Sheldon, 2010). There are also widespread concerns that the nation is not training the right specialty mix of physicians to meet society's needs (ACP, 2011; Bipartisan Policy Center Health Project, 2013b; MedPAC, 2010), and that these physicians are not geographically well distributed (Iglehart, 2011). At the same time, current economic pressures

[4] Medicare estimate provided via personal communication with Marc Hartstein, Director, Hospital and Ambulatory Policy Group, Center for Medicare, Centers for Medicare & Medicaid Services, September 12, 2013.

[5] Public Law 111-148.

place every federal program under intense scrutiny—including the funding of GME.

Workforce planning in today's environment is a complex and daunting challenge. The United States has never established a data infrastructure to support an assessment of the health care workforce or the educational system that produces it.[6] Although some suggest that covering the uninsured and the aging of the population will increase the need for physicians (COGME, 2013; Grover and Niecko-Najjum, 2013; Kirch et al., 2012), others suggest that new deployments of technology and other types of clinicians will reduce our reliance on physicians (Auerbach et al., 2013; Bodenheimer and Smith, 2013; Bodenheimer et al., 2009; Fuchs, 2013; Ghorob and Bodenheimer, 2012; Green et al., 2013; Reinhardt, 2013).

In this period of rapid change, there is also substantial concern that medical education is not preparing physicians to practice in contemporary America (Crosson et al., 2011; Johns, 2010; MedPAC, 2010; Skochelak, 2010; Weinstein, 2011). A variety of surveys indicate that recently trained physicians in some specialties cannot perform simple procedures often required in office-based practice and lack sufficient training and experience in care coordination, team-based care, and quality improvement (Cordasco et al., 2009; Crosson et al., 2011; MedPAC, 2010). They are often ill prepared to care for an increasingly diverse and aging population (IOM, 2008, 2012; Weissman et al., 2005).

CONCEPTUAL APPROACH TO THE STUDY

This report is based on the central premise that a good system of GME is one that supports the nation's health and health care goals, and those goals are well represented by the "triple aim" of improving the individual experience of care, improving the health of populations, and reducing per-capita costs of health care (Berwick et al., 2008). A focus on the individual experience of care requires attention to six dimensions of health care quality: safety, effectiveness, patient-centeredness, timeliness, efficiency, and equity (IOM, 2001). Prioritizing the health of populations requires that the health care workforce has skills not only in the treatment of acute conditions, but also in managing chronic disease and multiple conditions, and in disease prevention and health promotion. Targeting the reduction of per capita costs requires that providers practice cost-effective care with appropriate use of resources and that financial management incorporates accountability and transparency.

[6] Although the ACA authorized the creation of a National Health Care Workforce Commission to assume some of these responsibilities, the funds have not been appropriated for its operations.

The committee examined the assumptions that underlie current GME governance and financing arrangements—including the fundamental question of whether public funds should be used for this enterprise. The committee debated—at great length—the justification and rationale for federal funding of GME either through Medicare or other sources, given the lack of comparable federal financing for undergraduate medical education, other health care professionals, or other areas important to society and in shortage. The committee also considered the economist's perspective that residents, not teaching sites, bear the cost of their training by accepting low salaries that reflect (on average) the difference between the value of the services they provide and the cost of the training they receive (Becker, 1964; Chandra et al., 2014; Newhouse and Wilensky, 2001).

Improving the governance and financing of GME cannot, on its own, produce a high-value, high-performance health care system. Other factors, such as the way in which we pay for health care services, are surely more significant determinants of how physicians select specialties and geographic areas and how well the health care system functions more generally. Nevertheless, the GME system is a powerful influence over the makeup, skills, and knowledge of the physician workforce. The most important way to judge the governance and financing of GME is by the degree to which it helps the nation achieve the triple aim—objectives long advocated by the IOM. The committee, therefore, agreed that continued public funding of GME is warranted only if it is reformed to help produce a physician workforce better able to support a high-value, high-performing health care system.

Thus, this report examines the current landscape with an eye toward identifying opportunities to maximize the leverage of federal support and to minimize barriers to progress.

GOALS OF THE COMMITTEE

With the above principles in mind, the committee developed the following six goals to guide its research, analysis, and eventual recommendations for the future of GME:

1. Encourage production of a physician workforce better prepared to work in, to help lead, and to continually improve an evolving health care delivery system that can provide better individual care, better population health, and lower cost.
2. Encourage innovation in the structures, locations, and designs of graduate medical education programs, to better achieve Goal #1.
3. Provide transparency and accountability of GME programs, with respect to the stewardship of public funds and the achievement of GME goals.

4. Clarify and strengthen public policy planning and oversight of GME with respect to the use of public funds and the achievement of goals for the investment of those funds.
5. Ensure rational, efficient, and effective use of public funds for GME in order to maximize the value of this public investment.
6. Mitigate unwanted and unintended negative effects of transition from the current GME funding system to a future one.

METHODS OF THE STUDY

The committee deliberated over six in-person meetings and numerous teleconferences between September 2012 and January 2014. It began the study by reviewing past reports and recommendations regarding GME policy dating back several decades. These included all the relevant reports of the Council on Graduate Medical Education (COGME) and the Medicare Payment Advisory Commission (MedPAC), as well as policy recommendations from the American College of Physicians, American College of Surgeons, American Medical Association, American Osteopathic Association, Association of American Medical Colleges, Bipartisan Policy Center, Government Accountability Office, Josiah Macy Jr. Foundation, previous IOM committees, and others. Many of the reports included recommendations regarding accountability and transparency of GME funding; the sufficiency of the numbers of Medicare-supported residency slots; GME performance outcomes, methods and sources of funding; and the site and content of training, innovation, and research (AAMC, 2012a; ACP, 2011; AMA Citizens Commission on Graduate Medical Education, 1966; Bipartisan Policy Center Health Project, 2013a; Buser and Hahn, 2013; Coggeshall, 1965; COGME, 2005a,b, 2007, 2010, 2013; IOM, 1989, 2003a,b, 2004, 2008, 2010, 2012; Johns, 2010; Kirch, 2012; Macy Study Group, 1980; MedPAC, 2001, 2003, 2009, 2010; Office of Academic Affiliations, Veterans Health Administration, 2009; Shannon et al., 2013; Weinstein, 2011).

Several committee workgroups were formed to examine the reports in depth and to assess the quality of the available evidence on key topics such as physician workforce supply, GME costs and financing, governance and accountability, and residency program outcomes. To address the lack of generalizable GME cost data, a workgroup of the committee explored what it could learn about GME financing by interviewing and collecting GME cost and revenue data from several academic medical centers. Further details of this review are in Chapter 3.

The committee actively sought input from a broad spectrum of GME stakeholders. At the first meeting in September 2012, the committee heard invited testimony on GME policy concerns from senior legislative staff; federal representatives from the Medicare and Medicaid programs; HRSA; VA;

the Department of Defense; and congressional staff to the Senate Health, Education, Labor, and Pensions Committee; the Senate Finance Committee; the House Committee on Energy and Commerce and the Health Subcommittee on Health of the House Committee on Ways and Means. The committee held a second public forum in December 2012. This day-and-a-half event featured a wide range of perspectives, including academic medical centers, current and recent trainees, accreditation and certification organizations, allopathic and osteopathic colleges of medicine, physician specialty organizations, state and regional health workforce organizations, private insurers, teaching hospitals, teaching health centers and other community-based training sites, workforce and health services and policy research. The event was organized in a series of panels on national and regional workforce planning; determining the sufficiency of the workforce; challenges in developing community-based training; perspectives from current residency trainees; innovations in health care and medical education; ensuring accountability; and understanding the costs and financing of GME. Appendix C contains the agendas for the two public meetings, including a complete list of all speakers and their affiliations. The speakers' presentations and audio recordings from the December meeting are available on the study website: http://iom.edu/Activities/Workforce/GMEGovFinance.aspx.

ORIENTATION TO THE ORGANIZATION OF THIS REPORT

This introductory chapter has described the background, scope, methods, context, and conceptual approach to this report.

Chapter 2, *Background on the Pipeline to the Physician Workforce*, provides a snapshot of recent trends in the "production" of the physician workforce. It describes the characteristics of GME trainees and considers whether the GME system is producing the types of physicians that the nation requires. The focus is on specialty distribution, geographic location, the ability to care for diverse patient populations, and physicians' overall readiness to practice medicine.

Chapter 3, *GME Financing*, gives an overview of the principal sources and payment methods of GME funding. It then describes current Medicare rules governing the distribution of these funds, reviews what is known about the true costs and revenues associated with residency training, and concludes with a discussion of the implications of the current system for funding GME.

Chapter 4, *Governance*, describes the organizations that have a role in GME oversight and reviews the use of accountability mechanisms in Medicare and other federal GME programs. The primary focus is on Medicare GME because it provides most of the public funding.

Chapter 5, *Recommendations for the Reform of GME Financing and Governance*, presents the committee's conclusions and recommendations.

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2

Background on the Pipeline to the Physician Workforce

Abstract: *This chapter serves as background for this report's assessment of graduate medical education (GME) financing and governance. It reviews trends in the characteristics of GME trainees and considers whether the GME system is producing the type of physicians that the nation requires. The focus is on specialty distribution, geographic location, the ability to care for diverse patient populations, and physicians' overall readiness to practice medicine in settings where most Americans receive their health care. The committee finds that the recent expansion in physician education has occurred with little strategic direction. Several areas need the attention of policy makers to ensure the strategic investment of public funding for GME programs. These include learning how to motivate young physicians to train in specialties and locate in areas where they are most needed; identifying ways to improve the diversity of the physician trainees to better mirror the overall population; increasing GME training in community settings; and ensuring that newly trained physicians possess the skills essential for everyday practice.*

Physician education has made significant progress since Flexner revealed the poor quality of medical schools in the early 20th century (Flexner, 1910). The nation has a robust and productive GME system with significant capacity to produce the nation's physician workforce. Yet, there are also widespread concerns—and differences of opinion—about the size, competencies, and makeup of the physician workforce (Cassel and Reuben,

2011; COGME, 2013; Cronenwett and Dzau, 2010; Crosson et al., 2011; Detsky et al., 2012; Saha, 2014; Saha et al., 2008; Weiss et al., 2013).

The objective of this chapter is twofold: first, to briefly describe trends in the pipeline to graduate medical education (GME) programs (allopathic, osteopathic, and international medical school graduates)[1] and second, to review what is known about the "output" of today's GME system (newly trained physicians entering practice). The overarching question in this chapter is to what extent the GME system is producing an appropriately balanced physician workforce ready to provide high-quality, patient-centered, and affordable health care. The subsequent chapters examine the central focus of this study—the impact of GME financing and governance of GME on this question.

PHYSICIAN SUPPLY

The sufficiency of the physician supply—and the public's future role in financing the production of a larger physician supply—are among today's most contentious health workforce issues (Iglehart, 2013a; Nicholson, 2009). Determining future workforce requirements is an inherently imprecise activity (Bipartisan Policy Center, 2011). As Figure 2-1 illustrates, understanding the dynamics of physician supply involves many variables and uncertainties. Health care reimbursement and the organization of health care services, for example, are far more important than GME in determining the makeup and productivity of the physician supply (Salsberg, 2009). Nevertheless, the capacity of the GME system is a limiting factor because states require at least 1 year of residency training in the United States before a physician can obtain an unrestricted license to practice medicine (FSMB, 2013).

Although the committee was not charged with projecting the future demand for physicians, it reviewed recent projections and analyses of the capacity of the physician workforce to meet the nation's health needs (AAMC Center for Workforce Studies; 2012; Altschuler et al., 2012; Colwill et al., 2008; Green et al., 2013; Hofer et al., 2011; Ku et al., 2011; Petterson et al., 2012; Ricketts, 2011). Forecasts of the future physician supply are variable and contradictory in part because it is difficult to anticipate future directions in the health care system (Blumenthal, 2004; Iglehart, 2013b). In the 1970s, for example, concern about imminent shortages led to a significant push for expansion in the number of medical schools and students (Cooper, 2003). Title VII of the Public Health Service Act

[1] Allopathic medical schools confer the Doctor of Medicine (M.D.) degree and are accredited by the Liaison Committee of Medical Education. Osteopathic medical schools confer the Doctor of Osteopathy (D.O.) degrees and are accredited by the American Osteopathic Association.

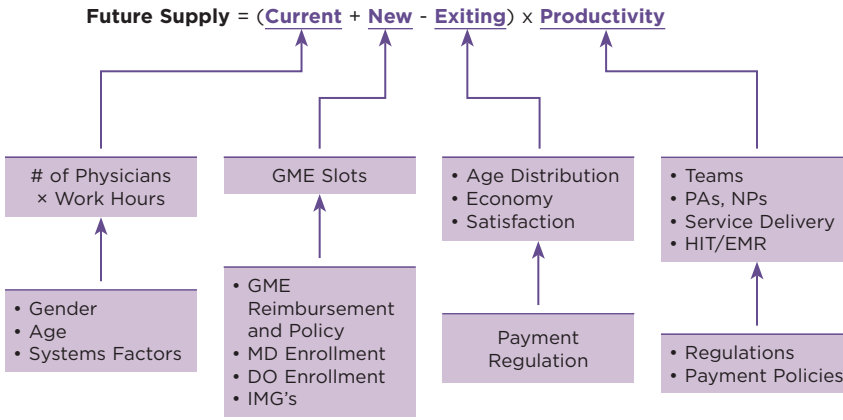

FIGURE 2-1 Physician supply: The complex reality.

NOTE: DO = doctor of osteopathy; EMR = electronic medical record; GME = graduate medical education; HIT = health information technology; IMG = international medical graduate; MD = medical doctor; NP = nurse practitioner; PA = physician assistant.

SOURCE: Salsberg, 2009 (AAMC State of the Physician Workforce Address).

provided significant funding for the expansion of medical schools (Phillips and Turner, 2012). From 1970 to 1984, the number of medical students increased by 66 percent and the number of residents by 25 percent. A decade later, the conventional wisdom was that the nation faced a significant oversupply of physicians because of the looming impact of managed care on demand for health care services (Fink et al., 2003; Pew Health Professions Commission, 1995).

More recently, projections of the physician supply suggest impending shortages that could prevent many people from getting needed health services. These analyses raise concerns that the rapid aging of the population and the expansion in health coverage in the Patient Protection and Affordable Care Act (ACA)[2] will fuel demand for physician services far beyond current capacity (AAMC, 2012a; Grover and Niecko-Najjum, 2013; Kirch et al., 2012; Sheldon, 2010). However, the underlying methodologies and assumptions about the future in these studies are problematic. They often assume historic provider-patient ratios with limited relevance to either contemporary health care delivery or the pressing need for a more coordinated, affordable, and patient-centered health care system (Bipartisan Policy Center, 2011; Dower and O'Neill, 2011). Other analyses that con-

[2] Public Law 111-148.

sider the potential impact of changes in health care delivery draw opposite conclusions. These studies suggest that an expanded primary care role for physician assistants (PAs) and advanced practice registered nurses (APRNs), redesign of care delivery and other innovations in health care delivery, such as telehealth and electronic communication, may ultimately lessen the demand for physicians despite the aging of the population or coverage expansions (Auerbach et al., 2013a,b; Bodenheimer and Smith, 2013; Bodenheimer et al., 2009; Ghorob and Bodenheimer, 2012; Green et al., 2013; Reinhardt, 2013; Weiner et al., 2013).

In response to the forecasts of shortages, some stakeholders and policy makers are pushing for significant increases in Medicare GME funding. They argue that Medicare should raise the current cap on the number of Medicare-funded residency positions in order to ensure the production of more physicians (Grover and Niecko-Najjum, 2013; Jolly et al., 2013; Kirch et al., 2012). Yet, the available evidence suggests that increasing the production of physicians is not dependent on additional federal funding. A recent analysis of 20 years of residency data documents that, despite the implementation of Medicare caps on funded training slots in 1997, the number of first-year residency positions has grown steadily since 2003—at a rate of increase similar to the period before the caps (Chandra et al., 2014).

Some proponents of increased Medicare GME funding also claim that the number of medical school graduates will soon exceed the available GME training slots (Jolly et al., 2013). Recent evidence does not support this concern. According to the National Residency Matching Program (NRMP),[3] about 3,500 new first-year Accreditation Council for Graduate Medical Education (ACGME)-accredited training slots have been created since 2010 (NRMP, 2014a,b). In the 2014 match, there were 7,000 more first-year residency slots than U.S. applicants: 22,300 U.S. allopathic and osteopathic medical school seniors applied for 1 of 29,666 first-year positions (Salsberg, 2014).

Simply increasing the numbers of physicians is unlikely to resolve workforce shortages in the regions of the country where shortages are most acute and is also unlikely to ensure a sufficient number of providers in all specialties and care settings. The evidence instead suggests that, although the capacity of the GME system has grown in recent years, it is not producing an increasing proportion of physicians who choose to practice primary care, to provide care to underserved populations, or to locate in rural

[3] The National Residency Matching Program (NRMP) is a private, non-profit corporation that matches applicants for ACGME-accredited training slots with ACGME-accredited training programs (NRMP, 2013). NRMP uses a computerized mathematical algorithm to match applicants' preferences with the preferences of residency program directors at U.S. teaching hospitals.

or other underserved areas (Rabinowitz et al., 2012; Rosenblatt, 2010; Shipman et al., 2013; West and Dupras, 2012). Also, although the numbers of underrepresented minorities have increased, their proportion in medical school and physician populations does not reflect the increasing racial and ethnic diversity of the American population (AAMC, 2010, 2012a,b,c; Sullivan, 2010; Sullivan and Suez Mittman, 2010).

THE GME PIPELINE—MEDICAL SCHOOL ENROLLMENT

In the past decade, there has been a marked increase in the number of medical colleges (both allopathic and osteopathic) and the size of medical school classes. No one factor explains the expansion. Numerous studies in the 1990s predicting serious physician shortages probably had a role. It appears that much of the growth was spurred by local concerns—both public and private—about physician supply. For example, several states—including Arizona, Florida, Michigan, Pennsylvania, and Texas—invested in medical school expansion with the expectation that many graduates would remain to practice locally (Whitcomb, 2009, 2013).

In 2005, the Council on Graduate Medical Education (COGME) released an influential report predicting rapid increases in the demand for physician services with the aging of the baby boomer population, growing U.S. population, and expansions in health insurance coverage (COGME, 2005a). The following year, the Association of American Medical Colleges issued a call for a 30 percent increase in the physician supply (AAMC, 2006; Adler et al., 2013). Since then, the number of medical schools and school enrollments has grown substantially. As Table 2-1 indicates, in the decade ending in 2012, overall enrollment in U.S. undergraduate medical colleges rose by nearly 28 percent, increasing from 80,180 to 102,498 students (AAMC, 2013a). Both allopathic and osteopathic medicine have expanded class sizes at many schools and also built new medical schools. Fourteen allopathic medical schools increased class sizes by more than 10 percent in 2013 (AAMC, 2013b). The growth in osteopathic medical colleges has been even more dramatic. Enrollment in institutions that granted the Doctor of Osteopathy (D.O.) nearly doubled during the decade, increasing from 11,432 students to nearly 22,000 students.

In 2013 alone, four new allopathic and three osteopathic medical schools opened their doors (AAMC, 2013b). Additional growth is under way: As this report was prepared, five new allopathic medical schools have initiated applications for accreditation (LCME, 2013).

TABLE 2-1 Change in the Number of Medical Schools, Medical School Enrollment, and Applicants to GME Programs, 2002 to 2012

	2002	2012	10-Year Change	
			Number	Percent
Number of medical colleges	145	175	30	20.7
Allopathic	125	141	16	12.8
Osteopathic	20[a]	34	14	70.0
Students enrolled in U.S. medical colleges	80,180	102,498	22,318	27.8
Allopathic	68,748	80,757	12,009	17.5
Osteopathic	11,432	21,741	10,309	90.2
U.S. medical school graduate applicants to graduate medical education (GME) programs	16,874[b]	20,248[c]	3,374	20.0
International medical graduate (IMG) applicants to GME programs	6,585	11,107	4,522	68.7
U.S. citizen IMGs	2,029	4,279	2,250	110.9
Non–U.S. citizen IMG applicants	4,556	6,828	2,272	49.9
Total potential applicant pool for GME positions (U.S. plus IMGs)	23,459	31,335	7,896	33.7
Total potential applicant pool for GME positions (U.S. plus IMGs)	23,459	31,335	7,896	33.7

[a] Data from 2003-2004.

[b] Class of 2002-2003.

[c] Includes seniors and previous graduates of U.S. allopathic medical schools, graduates of osteopathic medical schools, students and graduates of Canadian medical schools, and students and graduates of Fifth Pathway programs.

SOURCE: AACOM, 2012, 2013; AAMC, 2009, 2012b, 2013a; AOA, 2012; NRMP, 2002, 2012.

International Medical Graduates

In addition to the graduates of U.S. medical colleges, the GME pipeline also includes substantial numbers of graduates of international medical schools (referred to as IMGs), both U.S. citizens and foreign nationals. The IMG proportion of the GME applicant pool has been steadily increasing, as has the share of IMGs who are U.S. citizens. In 2012, fewer than two thirds of the GME applicant pool were graduates of U.S. medical schools (20,248, or 64.6 percent) (see Table 2-1) (NRMP, 2013). The remainder included

4,279 U.S. citizen graduates of international medical schools (13.6 percent), and 6,828 other international graduates (21.8 percent) (NRMP, 2013).

It is important to recognize the significant role of IMGs in U.S. health care; they make up a significant proportion of residents (27.0 percent) and practicing physicians (24.1 percent) (AAMC, 2013a). IMGs play a critical role in the health care of vulnerable populations because they are more likely to practice primary care and to locate in underserved regions of the country (Traverso and McMahon, 2012).

A concern, however, is that U.S. GME programs are contributing to a "brain drain" of physicians from low-income countries, as many of them do not return to their home country after residency training (Hagopian et al., 2004; Mullan, 2005).

GME TRAINING CAPACITY

Workforce planning involves gauging not only the numbers of needed personnel but also whether those with the right training are available "to deliver the right services to the right people at the right time" (Birch et al., 2009, p. S-56). Thus, to assess the output of the GME system, one should consider the capacity of the system to produce the types of physicians that will meet the health needs of a growing, aging, and diversifying population (Ricketts, 2011). This section provides a brief review of trends in the number and type of GME programs and the available evidence on key characteristics of the physician trainee population and recent GME graduates—by specialty and subspecialty, readiness to practice medicine in settings where most people seek health care, racial and ethnic diversity, and geographic location.

Numbers of GME Programs and Trainees

As noted earlier, the capacity of the GME system to train additional physicians has been growing. Both ACGME-accredited residency programs and residents have steadily increased in number over the last decade (see Table 2-2). Between academic years 2003-2004 and 2012-2013, the number of ACGME programs increased by 16.3 percent (from 7,968 to 9,265) and the number of residents by 17.5 percent (from 100,176 to 117,717). There were an additional 7,498 osteopathic physicians in 1,068 American Osteopathic Association (AOA)-accredited residencies in 2012-2013.[4]

[4] Osteopathic data were provided by personal communications from Konrad Miskowitz-Retz, Secretary, AOA, COCA, and Jim Swartwout, Executive Director, AOA, on March 17, 2014, and March 19, 2013, respectively.

TABLE 2-2 Growth in ACGME-Accredited Programs and Residents, Academic Years 2003–2004 to 2012–2013

	Academic Year		Increase	
	2003–04	2012–13	Number	Percent
Number of ACGME-accredited programs	7,968	9,265	1,297	16.3
Initial residency period	4,015	4,084	69	1.7
Subspecialty programs	3,953	5,181	1,228	31.1
Number of residents in ACGME-accredited programs	100,176	117,717	17,541	17.5
Initial residency period	85,513	97,155	11,642	13.6
Subspecialty programs	14,663	20,562	5,899	40.2

NOTE: ACGME = Accreditation Council for Graduate Medical Education.

SOURCE: Data drawn from ACGME, 2013.

Primary Care Training and Increasing Subspecialization in GME

The makeup of specialties and subspecialties[5] in the American physician workforce has changed dramatically since the advent of Medicare and Medicaid GME funding. In the early 1960s, primary care doctors made up an estimated half of the physician workforce (COGME, 2010). In 2010, the percentage was roughly 33 percent (AHRQ, 2011).

In less than a generation—from 1999 to 2013—the number of specialty certificates issued by the American Board of Medical Specialties increased from 84 to 145 (see Table 2-3) (ABMS, 2013). Although some of the increase was due to the creation of new pipeline specialties (e.g., family medicine, emergency medicine), the greatest growth has been in subspecialty programs. As Table 2-2 indicates, the number of ACGME-accredited subspecialty programs rose by more than 30 percent from academic years 2003-2004 to 2012-2013. The number of fellows in subspecialty training grew by 40 percent.

The trend toward a highly specialized physician workforce is especially apparent in internal medicine (IM) (Cassel and Reuben, 2011). The proportion of IM residents interested in a primary care career has dropped precipitously. In 1998, 54 percent of third-year IM residents planned careers in general IM. By academic years 2009-2011, the percentage was only 21.5 percent (West and Dupras, 2012). After completing an IM

[5] Specialty terminology can be confusing. All physicians who successfully complete a residency program are considered specialists even if the specialty is a primary care specialty.

TABLE 2-3 Initial Residency Period and Subspecialty Certificates Issued by the American Board of Medical Specialties, Selected Years

Year	Number of Certificates
1969	10
1979	20
1992	66
1996	74
1999	84
2013	145

SOURCE: ABMS, 2013.

residency, physicians can now pursue further training and certification in 22 subspecialties—5 of which are devoted just to heart disease (adult congenital heart disease, advanced heart failure and transplant cardiology, cardiovascular disease, clinical cardiology electrophysiology, and interventional cardiology) (see Table 2-4). The other IM subspecialties are adolescent medicine, critical care medicine, diabetes and metabolism, endocrinology, gastroenterology, geriatric medicine, hematology, hospice and palliative medicine, infectious disease, medical oncology, nephrology, pulmonary disease, rheumatology, sleep medicine, sports medicine, and transplant hepatology.

A similar trend has occurred in surgery as surgical residents increasingly eschew general surgery for subspecialty practice in vascular surgery, pediatric surgery, surgical critical care, surgery of the hand, hospice and palliative medicine, complex general surgical oncology, or thoracic surgery. From 2001 to 2010, the number of new general surgery residents who expected to enter practice without specialized training declined by 33.3 percent (Jolly et al., 2013).

See Table 2-4 for a list of selected pipeline specialties with numerous pathways to subspecialization.

Influences on Specialty Career Choice

There is a considerable literature—based largely on surveys, questionnaires, and other personal reports—describing factors that influence physicians' decision specialty choice. The evidence suggests that a complex interplay of many variables, including expected future income (and

TABLE 2-4 Selected Pipeline Specialties (Initial Residency Period) with Five or More Subspecialties

Pipeline Specialty	Number of Subspecialties	Subspecialties
Anesthesiology	5	Critical Care Medicine, Hospice and Palliative Medicine, Pain Medicine, Pediatric Anesthesiology, Sleep Medicine
Emergency Medicine	8	Anesthesiology Critical Care, Emergency Medical Services, Hospice and Palliative Medicine, Internal Medicine-Critical Care Medicine, Medical Toxicology, Pediatric Emergency Medicine, Sports Medicine, Undersea and Hyperbaric Medicine
Internal Medicine	22	Adolescent Medicine, Adult Congenital Heart Disease, Advanced Heart Failure and Transplant Cardiology, Cardiovascular Disease, Clinical Cardiac Electrophysiology, Critical Care Medicine, Diabetes and Metabolism, Endocrinology, Gastroenterology, Geriatric Medicine, Hematology, Hospice and Palliative Medicine, Infectious Disease, Interventional Cardiology, Medical Oncology, Nephrology, Pulmonary Disease, Rheumatology, Sleep Medicine, Sports Medicine, Transplant Hepatology
Neurology	9	Brain Injury Medicine, Clinical Neurophysiology, Epilepsy, Hospice and Palliative Medicine, Neurodevelopmental Disabilities, Neuromuscular Medicine, Pain Medicine, Sleep Medicine, Vascular Neurology
Pediatrics	14	Adolescent Medicine, Cardiology, Child Abuse Pediatrics, Critical Care Medicine, Developmental-Behavioral Pediatrics, Emergency Medicine, Endocrinology, Gastroenterology, Hematology-Oncology, Infectious Diseases, Neonatal-Perinatal Medicine, Nephrology, Pulmonology, Rheumatology
Psychiatry	10	Addiction Psychiatry, Brain Injury Medicine, Child and Adolescent Psychiatry, Clinical Neurophysiology, Forensic Psychiatry, Geriatric Psychiatry, Hospice and Palliative Medicine, Pain Medicine, Psychosomatic Medicine, Sleep Medicine
Surgery	8	General Surgery, Vascular Surgery, Pediatric Surgery, Surgical Critical Care, Surgery of the Hand, Hospice and Palliative Medicine, Complex General Surgical Oncology, Thoracic and General Surgery Joint Pathway

NOTE: Neurology and Psychiatry are both governed by the American Board of Psychiatry and Neurology.

SOURCES: ABIM, 2014; ABR, 2014; American Board of Anesthesiology, 2013; American Board of Emergency Medicine, 2014; American Board of Pediatrics, 2014; American Board of Psychiatry and Neurology, 2013; American Board of Surgery, 2014.

physician payment rules that favor certain specialties and subspecialties), the prestige of the specialty (or lack of it for primary care), medical educators' bias against primary care, design and location of residency programs, the personal desire for clearly defined responsibilities, lifestyle considerations, medical school debt, demographic factors, and practice location (Chen et al., 2013; Cordasco et al, 2009; Diehl et al., 2006; Dowdy, 2011; Garibaldi et al., 2005; Greysen et al., 2011; Hauer et al., 2008; Jeffe et al., 2010; Kussmaul, 2013; Phillips et al., 2009; Schwartz et al., 2011; Warm and Goetz, 2013; West et al., 2009).

The income differentials between various specialties and/or subspecialties are substantial (Bodenheimer et al., 2007; COGME, 2010; Vaughn et al., 2010) and a particularly strong influence on career choice (Ebell, 2008; Weida et al., 2010). For example, an analysis comparing the present value of career wealth (up to age 65) between a primary care physician and a cardiologist estimated a differential of more than $2.7 million (Vaughn et al., 2010). Other studies have documented annual income differentials ranging from about $100,000 to several hundred thousand depending on the subspecialty (Bodenheimer et al., 2007; COGME, 2010; Ebell, 2008).

Regardless, it is clear is that the GME system's production of specialists and subspecialists has evolved without strategic direction in relation to the nation's health needs. The overriding influences are the personal career choices of individual trainees and the decisions of teaching hospitals regarding what type of residencies to sponsor. As the next chapter will describe, Medicare GME funding is not linked in any way with local, regional, or national health care workforce priorities.

Primary Care Physicians

Many experts are concerned that the rapid transition to a highly specialized physician workforce has undermined the nation's capacity to progress to a higher-quality and less costly health care system. The corresponding evidence, however, is inconclusive (Baicker and Chandra, 2004; Chang et al., 2011; Detsky et al., 2012). Regardless, the crucial issue is not necessarily the declining numbers of primary care physicians but effective organization, deployment of health personnel, and integration of primary care with other health care services. A growing body of literature demonstrates that the Patient-Centered Medical Home (PCMH) and other well-integrated delivery models provide higher-quality and more cost-effective care than the less coordinated systems of care typical of U.S. health care delivery (Gilfillan et al., 2010; IOM, 2012a; Liss et al., 2013; Maeng et al., 2012; Reid and Larson, 2012). There is also compelling evidence that integrating mental health and substance use services into primary care

improves outcomes, particularly for older adults with depression or at-risk drinking (IOM, 2012b).

Physicians make up approximately 74 percent of the primary care workforce; nurse practitioners, 19 percent; and PAs, 7 percent (Dower and O'Neill, 2011). No one ideal staffing mix for delivering effective primary care services has been determined. A variety of workforce models suggests that innovative mixes of primary care personnel—including greater use of APRNs, PAs, and team-based task delegation—may reduce the demand for primary care physicians in the future (Altschuler et al., 2012; Auerbach et al., 2013a,b; Bodenheimer and Pham, 2010; Bodenheimer and Smith, 2013; Bodenheimer et al., 2009; Ghorob and Bodenheimer, 2012). The PCMH model, for example, uses interprofessional teams of physicians, advanced practice nurses, physician assistants, pharmacists, nutritionists, social workers, health educators, and care coordinators to provide primary care. In nurse-managed health centers, nurse practitioners provide primary care services (Auerbach et al., 2013a). The role of the physician may vary from being central to a more consultative role (Patel et al., 2013).

Readiness to Practice

Many experts have observed that new physicians often lack sufficient training and experience in care coordination, team-based care, costs of care, cultural competence, and quality improvement (Center for Total Health, 2011). Various surveys indicate that recently trained physicians lack essential skills for office-based practice (Cordasco et al., 2009; Crosson et al., 2011a; MedPAC, 2009, 2010). A survey of the clinical department chiefs in IM, pediatrics, general surgery, and obstetrics/gynecology in Kaiser Permanente's Northern California region, for example, found that new physicians had difficulties in managing routine conditions (e.g., care of minor depression and anxiety, minor chronic pain, certain acute musculoskeletal problems, basic dermatological conditions, and headaches) and performing simple procedures provided in outpatient settings (Crosson et al., 2011a).

In addition, although cultural competence is increasingly recognized as a core competency for all health providers (National Quality Forum, 2009; Wilson-Stronks et al., 2008), surveys of residents suggest that trainees feel ill prepared to provide culturally competent care to diverse populations (Betancourt et al., 2007; Weissman et al., 2005).

Other surveys have found little awareness of the costs of diagnostic procedures among residents and faculty (Patel et al., 2014; Sehgal and Gorman, 2011).

Both allopathic and osteopathic medicine have undertaken ambitious initiatives to remodel the system for accrediting residency training

programs,[6] in part, to better prepare physicians for practice in real world settings (Buser and Hahn, 2013; Nasca et al., 2010). The ACGME is currently implementing its "Next Accreditation System" (NAS) for all specialties. The new system was specifically developed to enhance the ability of the accreditation process to promote the training of physicians for practice in the 21st century. Assessments of educational outcomes and the clinical learning environment are key components of the NAS and are based on six core competencies—patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and systems-based practice (Nasca et al., 2010, 2014a,b).

In 2013, the AOA issued a "New Pathway of Medical Education," a blueprint for training osteopathic primary care physicians ready to practice in contemporary health care settings (Buser and Hahn, 2013; Shannon et al., 2013). The Pathway builds on five core principles: (1) team-based, patient-centered care; (2) competency-based curriculum; (3) continuous, longitudinal education; (4) clinical experiences in a variety of settings; and (5) a focus on health care delivery science.

Training Site

Some of the problems related to readiness to practice may stem from the nature of the sites where physicians are trained. There is a striking contrast between the sites where residents train compared with the sites where they are likely to spend most of their careers (Sisson and Dalal, 2011). Nearly all GME training occurs in the hospital—even in primary care residencies. Wynn and colleagues (2013) analyzed the GME data that teaching hospitals submitted to Medicare in 2012. The researchers found that only 53 percent of primary care residents train in hospitals that provide training opportunities in non-hospital settings.

The Teaching Health Center (THC) program,[7] established in the ACA, is one step toward expanding residency training in community settings. Unlike the Medicare program, which funnels GME funding through teaching hospitals to support residency training, the THCs receive GME funding for primary care residencies directly from the Health Services and Resources Administration (Chen et al., 2012). It is too soon to know if training in these sites will ameliorate some of the readiness issues, and evaluation of these outcomes is important. Unfortunately, however, the authorization for the program's appropriations will expire in FY 2015 and its long-term prospects are uncertain. In academic year 2013, 333 residents in 45 residency

[6] See Chapter 4 for a discussion of GME governance including accreditation.
[7] Chapter 3 provides more details on the funding of the THC program.

programs in 21 states were supported by THC awards (HRSA, 2013). Most of the funded programs are in family medicine.

Diversity of the Physician Trainee Pool

Producing a physician workforce that reflects the diversity of the American population has been a goal of medical schools, teaching hospitals, policy makers, and the health care professions for many years (AAMC and ASPH, 2012; COGME, 1998, 2005b; Grumbach and Mendoza, 2008; IOM, 2003a, 2004; Nivet and Berlin, 2013; Saha, 2014; Saha and Shipman, 2008). The importance of these efforts is underscored by strong evidence that racial, ethnic, and linguistic diversity among health care providers is correlated with better access to and quality of care for underserved populations (Grumbach and Mendoza, 2008). In addition, nearly two decades of research have documented that non-white physicians disproportionately care for underserved groups and racial and ethnic minority populations (IOM, 2003b; Komaromy et al., 1996; Marrast et al., 2013; Moy and Bartman, 1995). Recent studies also suggest that a more diverse student and faculty presence can enhance the learning environment of all students by providing formative multicultural experiences (Saha et al., 2008; Shaw, 2005).

The challenge in ensuring a diverse physician workforce is daunting. Real progress has been made; the numbers of underrepresented minorities in U.S. medical schools have increased. However, with the growing diversity of the overall U.S. population, the racial and ethnic differences between medical school graduates and the overall population is actually widening (as illustrated in Figure 2-2). In 2012, there were 5,630 African American and 7,225 Hispanic students in U.S. medical schools, representing 6.9 percent and 8.8 percent of total enrollment, respectively (AAMC, 2012c). The Census Bureau projects that, by 2015, 38 percent of the U.S. population will be persons who identify as a racial minority or of Hispanic background, and this proportion will rise to 51 percent by 2045 (U.S. Census Bureau, 2012). In some states and geographic regions, the contrast between the racial and ethnic makeup of the physician and overall population is especially striking. In California, for example, 36 percent of the population is Hispanic, compared with only 5 percent of the state's physicians (UCLA International Medical Graduate Program, 2013).

Achieving greater income diversity in the GME pipeline is also a concern. More than 75 percent of medical students come from the two highest quintiles of family incomes, and only 5.5 percent have come from families in the lowest quintile of income ($19,178 or less in 2006) (AAMC, 2013b; Jolly, 2008).

There is promising evidence that GME programs can modify recruitment practices to attract competitive underrepresented minorities (Auseon

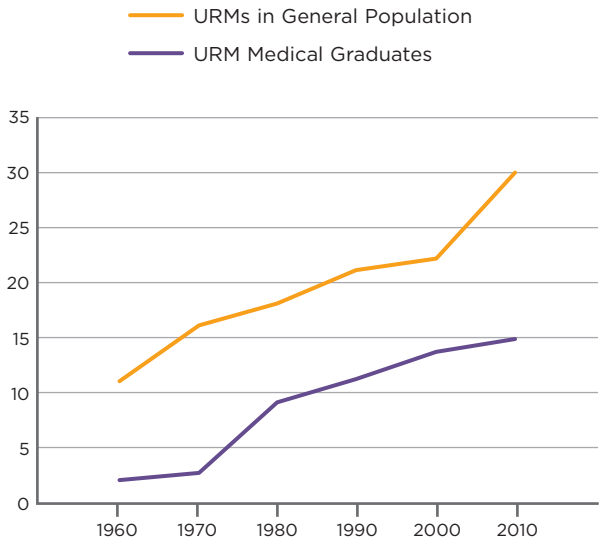

FIGURE 2-2 Trends in the proportion of underrepresented racial minorities (URMs) among medical school graduates and the U.S. general population.
SOURCE: Sullivan, 2010 (AAMC).

et al., 2013). However, the GME system has limited leverage because the trainee population depends on the pipeline that begins with premedical education. Therefore, most diversity initiatives focus on interventions early in the physician education continuum—during application to medical school, college, or even earlier (Nivet and Berlin, 2013).

The lack of research on the effectiveness of diversity interventions is a major barrier to progress. Despite the decades of efforts to address the problem, little is actually known about what works.

Geographic Maldistribution

Physicians—whether primary care clinicians or subspecialists—live and practice primarily in suburban and metropolitan areas. Although about 19 percent of the U.S. population live in rural areas[8] (U.S. Census Bureau,

[8] The U.S. Census Bureau defines rural as any population, housing, or territory outside urban areas.

2013), just 11 percent of physicians practice in these areas[9] (Chen et al., 2010) and only 2.9 percent of medical students envision practicing in a rural or small-town environment (Fordyce et al., 2012; Rabinowitz et al., 2008; Rosenblatt et al., 2010). The proportion of medical students with rural backgrounds has declined in the past decade: In 1999-2001, 6.7 percent of medical students had rural backgrounds compared with 4.1 percent in 2009-2011 (Shipman et al., 2013).

The lack of sufficient numbers of all types of health care personnel in less populated areas has been a constant and seemingly unyielding problem in the United States (IOM, 1996; Rabinowitz et al., 2012; Ricketts, 2013). Indeed, it is a persistent and largely unsolved issue worldwide. It is unlikely that improving access to health care in American rural (or other underserved) areas can be achieved solely by expanding the overall pool of physicians. Recent experience demonstrates that simply producing more physicians has little impact on the problem. Most new physicians locate in cities and suburbs, including areas with a surplus of clinicians in their particular specialty.

The location of one's medical school and GME training are predictive of practice location, and the longer the period of training is in a particular geographic area, the more likely the individual is to practice there, although it is not clear what factors actually drive this relationship (such as the relative influence of college, medical school, or residency training location). In 2012, states retained nearly half of the physicians (47.4 percent) graduating from the state's residency programs and 66.6 percent of those who completed both undergraduate and graduate medical education in the state (AAMC, 2013a). Other influences on practice location in underserved geographic areas include exposure to rural or underserved populations during training, related curriculum and experience during training, growing up in a rural or underserved area, and closeness of a prospective practice location to one's hometown (Barrett et al., 2011; Bazemore et al., 2009; Chen et al., 2010; Phillips et al., 2013; Quinn et al., 2011; Rabinowitz et al., 2005, 2008, 2012).

As with the challenge of improving diversity, no interventions have been tested to identify effective ways of deploying physicians in rural health care settings. Conducting the necessary research will depend, in part, on modifying current Medicare GME payment rules because, under the current system, the geographic distribution of Medicare-funded GME training slots primarily is essentially frozen based on the location of residencies in 1996.[10]

[9] Chen et al. (2010) mapped zip codes to Rural-Urban Community Area codes to determine rural residence.

[10] Chapter 3 describes Medicare payment rules that affect the geographic location of trainees.

CONCLUSIONS

The United States has a robust GME system, emulated by many other nations, with significant capacity to produce the nation's physician workforce. GME programs are increasingly producing a highly specialized workforce. It is notable that growth in the number of specialties and subspecialties is occurring without any coordinated planning. This chapter's examination of the makeup and output of the GME pipeline indicates that the trend toward greater specialization has occurred with little strategic direction—at least with respect to local, regional, and national needs for a balance of primary care practitioners and subspecialists. The number of physician trainees is increasing, but there is little evidence to suggest that the expansion in training capacity is in areas—either geographically or by specialty—where they are most needed.

The proportions of internal medicine residents pursuing careers in general internal medicine and of surgery residents pursuing careers in general surgery have markedly declined. Less than 3 percent of medical students expect to practice in a rural or small-town environment, where physician shortages are most acute.

The United States is rapidly becoming one of the most racially and ethnically diverse nations in the world, but the gap between the diversity among physician trainees compared with the overall population is actually widening. In addition, residents report that they feel ill-prepared to provide culturally competent care to diverse populations.

Much attention of late has focused on the possibility of future shortages in primary care and other specialties nationwide. But this concern is based on studies with unreliable methodologies that do not adequately relate the demand for physicians to the features of a high-performing system of care and that also ignore the regional variations in workforce supply. In contrast, too little focus has been given to how best to organize and deploy physicians through innovative approaches to care delivery. Much remains to be learned. But no interventions have been tested to identify what works to resolve persistent problems such as how to motivate young physicians to train in specialties and locate in areas where they are most needed or ways to reverse the widening gap between the diversity of the physician trainee population compared with the overall population.

Finally, and particularly concerning, is the evidence that recent GME graduates do not have some of the essential skills for office-based practice, where most of them will spend their careers. This is likely due, in part, to the overwhelming emphasis of current GME programs on training physicians in hospitals rather than in community settings.

In summary, there is a clear and compelling imperative for the nation to leverage its investment in GME toward producing a physician workforce

ready to provide high-quality, patient-centered, and affordable health care in all regions of the nation.

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3

GME Financing

Abstract: *This chapter examines graduate medical education (GME) financing, focusing particularly on Medicare but including Medicaid and Veterans Health Administration GME funding as well as Health Resources and Services Administration programs that support residency training. Total federal GME funding exceeds $15 billion per year. The financial underpinnings of the GME enterprise are complex and largely undocumented. The committee found few informative data on GME financing and its outcomes. As a result, the financial impact of residency training programs on teaching hospitals and other sponsoring organizations is not well understood. Medicare GME payments are based on statutory formulas that were developed at a time when hospitals were the central—if not exclusive—site for physician training. The rules continue to reflect that era. GME monies are distributed primarily to teaching hospitals, which in turn have fiduciary control over the funds. This creates a disincentive to training in non-hospital settings where most residents will eventually practice and most people seek health care services. Because the Medicare formulas are linked to Medicare patient volume, the system disadvantages children's hospitals, safety net hospitals, and other training sites that care for mostly non-elderly patients. Medicare-supported training slots are frozen where they existed almost two decades ago, perpetuating inequities in the geographic distribution of training slots and ignoring changes in the geography and demography of the U.S. population. Medicare GME funding is formula-driven, without accountability*

for national health care needs or priorities. Complete and comparable data on the use or outcomes of GME funds are not available. The current GME financing system offers little, if any, incentives to improve the quality or efficiency of physician training.

Few taxpayers know that significant financial public support underlies the graduate-level training of the nation's physicians. Perhaps even fewer people realize that two federal programs—Medicare and Medicaid—distribute an estimated $12 to 14 billion each year to support teaching hospitals and other training sites that provide graduate medical education (GME). Physicians who train in Medicare- or Medicaid-supported residencies are under no obligation to accept Medicare or Medicaid patients when they enter practice, nor are they required to provide any other types of services to these programs.

The objective of this chapter is to examine public spending on GME and what is known about private sources of GME support. The chapter begins with a brief overview of the principal sources of GME funding. It then describes the methods used by Medicare, Medicaid, the Health Resources and Services Administration (HRSA), and the Veterans Health Administration (VHA) to distribute these funds. The next section reviews what is known about the financial costs and benefits associated with residency training for teaching hospitals. The chapter concludes with a discussion of the implications and consequences of the current system for funding GME.

OVERVIEW OF GME FUNDING

Tracking the flow of public GME funds is daunting, as Figure 3-1 illustrates. The financial underpinnings of the GME enterprise are complex and largely undocumented. Federal funding for GME includes both mandatory (i.e., Medicare and the federal Medicaid match) and discretionary appropriations (e.g., HRSA, VHA, Department of Defense [DoD]). Most states support GME through their Medicaid programs, and some states provide other GME support through state-based programs such as loan repayment incentives to address health workforce shortages (Henderson, 2013; Pathman et al., 2012; Spero et al., 2013).

GME is also supported by private sources. Private funding is difficult to quantify but may be significant. Private insurers support GME implicitly by paying higher rates to teaching institutions. Hospitals, universities, physicians' organizations, and faculty practice plans also support residencies and fellowships. Private philanthropy and gifts or grants from industry (primarily pharmaceutical and medical device companies) are another source of financial support (Spero et al., 2013; Wynn, 2012). Many of these GME funding streams individually represent a minor fraction of GME funding

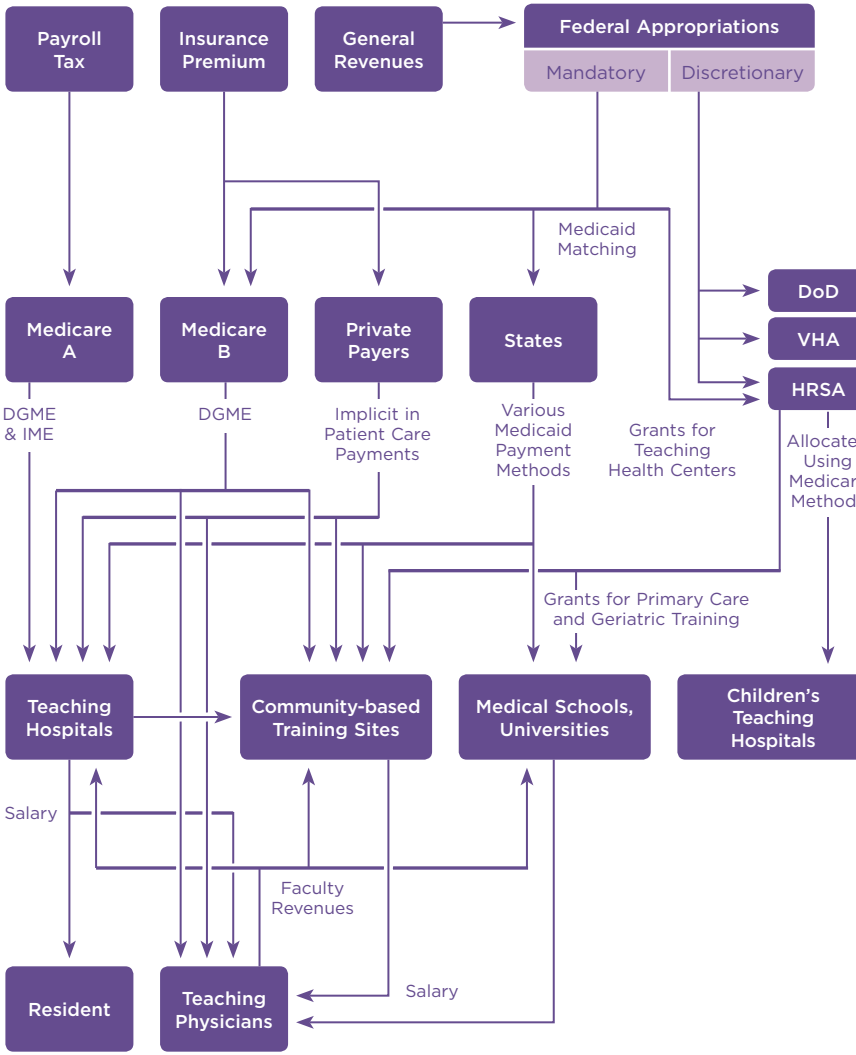

FIGURE 3-1 Current flow of GME funds.

NOTE: DGME = direct graduate medical education; DoD = Department of Defense; HRSA = Health Resources and Services Administration; IME = indirect medical education.

SOURCE: Adapted from Wynn, 2012 (Committee of Interns and Residents Policy and Education Initiative White Paper, "Implementing the 2009 Institute of Medicine recommendations on resident physician work hours, supervision, and safety").

nationally, but for some teaching programs they may support most, if not all, of the operating budget.

Table 3-1 provides the most recent available estimates of GME funding by source. The single largest explicit contributor to GME is Medicare ($9.7 billion), followed by Medicaid ($3.9 billion) and the VHA ($1.4 billion). HRSA distributes approximately $0.5 billion through a variety of GME-related programs (HRSA, 2013c).

TABLE 3-1 Source and Estimated Amount of GME Funding, Selected Years

Funding Source	Fiscal Year	Funding (in billions)
Medicare (total)	2012	**$9.7**
Acute care hospitals		$9.6
Indirect payments		6.8
Direct payments		2.6
Specialty hospitals		0.1
Medicaid	2012	**3.9**
Veterans Health Administration (VHA) (total)	2012	**1.437**
Indirect payments		0.816
Direct payments		0.621
Department of Defense		NA
HRSA (total ~$.464)		
Children's Hospitals GME	2013	0.251
NHSC Loan Repayments	2011	0.096
Teaching Health Centers GME	2011	0.046
Title VII Primary Care Programs	2011	0.071
Other state funding		NA
Private insurers		NA
Other private sources		NA

NOTES: VA indirect payments include training of all health professionals. Medicaid includes federal and state shares. CHGME estimate is from its operating budget while under sequestration in 2013. NA=not available.

SOURCES: Henderson, 2013; HRSA, 2013b. Medicare estimates provided by Marc Hartstein, Director, Hospital and Ambulatory Policy Group, Center for Medicare, CMS, September 4, 2013 (personal communication). VHA estimates provided by Barbara K. Chang, Director of Medical and Dental Education, VHA Office of Academic Affiliations, July 15, 2013 (personal communication).

MEDICARE

The Medicare program has funded GME since its inception in 1965. Congress apparently intended Medicare GME funding to be temporary but wanted to ensure that Medicare beneficiaries had access to the highest quality hospitals (Iglehart, 1999). When the Medicare legislation was enacted, reports from the House and Senate said, "Educational activities enhance the quality of care in an institution, and it is intended, until the community undertakes to bear such education costs in some other way, that a part of the net cost of such activities (including stipends of trainees, as well as compensation of teachers and other costs) should be borne to an appropriate extent by the hospital insurance program."[1]

At the outset, Medicare GME payments to teaching hospitals were calculated based solely on hospitals' costs. With the advent of the Medicare prospective payment system (PPS) for acute care hospitals in 1983, two separate GME funding streams were established for teaching hospitals[2]: (1) Direct Graduate Medical Education (DGME) funding to cover the direct expenses associated with residency training (e.g., residents' and faculty salaries and benefits and certain administrative and overhead costs); and (2) Indirect Medical Education (IME) funding, an adjustment to individual teaching hospitals' PPS inpatient rates to help defray the additional costs of providing patient care thought to be associated with sponsoring residency programs. Of the $9.6 billion Medicare paid to acute care teaching hospitals for GME in 2010, about $6.8 billion (70.8 percent) were via the IME adjustment and $2.8 billion via DGME payments (29.2 percent).[3] An additional $0.1 billion was paid to specialty hospitals for DGME and to psychiatric and rehabilitation inpatient facilities for IME.

Box 3-1 provides a timeline for the legislation that has shaped Medicare GME and other federal GME funding.

Medicare DGME and IME funds distribution to acute care hospitals is governed by strict, statutory formulas that are described below. It is important to note that Medicare GME funding was never intended to cover teaching costs for non-Medicare patients. Both the DGME and IME formulas include variables that tie payments to a teaching institution's volume of Medicare patients. Regardless, most, if not all, residencies must train

[1] 1965 Social Security Act (Senate Report No. 404, Pt. 1, 89th Congress, 1st Sess. 36 [1965]; H.R. No. 213, 89th Cong., 1st Sess. 32 [1965]).

[2] Direct Graduate Medical Education and Indirect Medical Education payments to teaching hospitals for Medicare managed care enrollees are calculated to be equivalent to payments for fee-for-service Medicare beneficiaries (Wynn et al., 2013).

[3] Personal communication, Marc Hartstein, Director, Hospital and Ambulatory Policy Group, Medicare Center, Centers for Medicare & Medicaid Services, September 4, 2013 (e-mail).

BOX 3–1
Legislative Milestones in Medicare Financing of Graduate Medical Education (GME)

1965 The Medicare program is created and establishes retrospective cost-based reimbursement for hospital inpatient stays—certain Direct Graduate Medical Education (DGME) costs are included (e.g., trainees' stipends, faculty compensation, and other costs).

1983 Medicare cost-based reimbursement for acute care hospital operating costs ends with implementation of the Prospective Payment System (PPS). Medicare continues to pay for DGME on a cost basis but also makes an Indirect Medical Education (IME) adjustment to PPS rates:

- IME—an adjustment to the PPS operating rate to account for the additional patient care costs associated with sponsoring residency programs.
  - Congress mandates an IME adjustment factor of 11.59 percent for each 10 percent increase in the institution's intern-and-resident-to-bed ratio—double the 5.795 percentage rate recommended by the U.S. Department of Health and Human Services Secretary.

1985 Consolidated Omnibus Budget Reconciliation Act (COBRA) (Public Law 99-272) establishes a prospective payment for DGME and revises the IME formula.

- DGME payments are made according to a per-resident amount (PRA) adjusted for the proportion of the hospital's patient days attributable to Medicare patients.
  - The PRA is based on individual hospital's direct training costs in 1984 (updated annually for inflation).
  - The full PRA is paid only for trainees in their initial residency period (i.e., the minimum time required for board eligibility or 5 years, whichever was shorter).
  - Payment for trainees after their initial residency period is reduced to half of the PRA.
  - The IME adjustment factor is reduced to 8.1 percent.

1987 Omnibus Budget Reconciliation Act (OBRA) (Public Law 100-203) reduces the IME adjustment factor from 8.1 to 7.7 percent effective in 1989.

1993 OBRA of 1993 (Public Law 103-66) increases the PRA by about 6 percent for primary care and obstetrics trainees in 1994 and 1995. In addition:

- The inflation adjustment is withheld for non-primary care specialties for 2 years.
- The PRA for advanced training in preventive medicine trainees is increased from .5 to 1.0.

BOX 3–1 *Continued*

1997 Balanced Budget Act (BBA) (Public Law 105-33) includes provisions to stem increases in GME payments while extending GME to some non-hospital settings:

- Allopathic and osteopathic residency counts for teaching hospitals are capped at 1996 levels. Requires an incremental reduction in the IME adjustment factor from 7.7 to 5.5 percent, phased in until 2001.
- Direct graduate medical education (DGME) payment is modified to include some costs of training in certain ambulatory sites (including federally qualified health centers, rural health clinics, and Medicare+Choice organizations) whereas, previously, the allowable DME costs were limited largely to training activities in hospital settings.

1999 Balanced Budget Refinement Act of 1999 (Public Law 106-113) includes several changes to GME funding:

- The IME adjustment factor is frozen at 6.5 percent.
- The resident cap for a rural hospital is increased to 130 percent of its 1996 level.
- A minimum PRA is established at 70 percent of the national PRA; PRAs above 140 percent of national PRA are frozen for 2001 and 2002 and have reduced inflation adjustments for 2003-2005.
- The full PRA is extended by 2 years for child neurology.
- The Medicare Payment Advisory Commission is asked to develop recommendations on the appropriate length of the initial residency period.

The Health Research and Quality Act (Public Law 106-129) creates the Children's Hospital Graduate Medical Education (CHGME) Program to support residency training in freestanding children's hospitals. The Act authorizes the Health Resources and Services Administration to make DGME and IME payments to eligible institutions.

2000 Medicare, Medicaid, and State Children's Health Insurance Program (SCHIP) Benefits Improvement and Protection Act (Public Law 106-554) freezes the maximum PRA to 140 percent of the locally adjusted national average amount while also delaying or reversing previously enacted downward adjustments to DGME and IME:

- The previously mandated incremental decrease in IME to 5.5 percent is delayed until 2003.
- The minimum PRA is raised from 70 to 85 percent of the national PRA.

BOX 3–1 *Continued*

2003 Medicare Prescription Drug, Improvement, and Modernization Act (Public Law 108-173) includes several GME provisions:

- IME: A short-term increase in the adjustment factor to 6.0 percent in 2004 to be followed by decreases to 5.8 percent in 2005, 5.55 percent in 2006, and 5.35 percent in 2007, and then raised and capped at 5.5 percent for 2008.
- DGME:
  - The number of Medicare-funded training slots is reduced in hospitals[a,b] below their resident cap.
  - 75 percent of the unfilled slots become available to other hospitals (but no one hospital can increase the number of funded positions by more than 25 percent).
  - Residents in geriatric training count as full-time equivalents for 2 years of training.
- Freeze on PRA exceeding 140 percent of national PRA extended through 2013.

2006 The CHGME Support Reauthorization Act (Public Law 109-307) extends the program's funding through 2011 and introduces a reporting requirement for participating children's hospitals.

2010 The Patient Protection and Affordable Care Act (ACA) (Public Law 111-148) contains several GME-related provisions focused on extending GME to underserved areas and populations:

- The ACA creates a 5-year, $230 million Teaching Health Center (THC) GME program to expand primary care training.
  - GME payments to THCs cover both direct and indirect expenses associated with sponsoring an approved GME program.
- The number of approved training slots is reduced in hospitals[a] with excess capacity (i.e., 65 percent of unfilled positions).
  - 70 percent of unfilled slots go to teaching hospitals in states with low resident-to-population ratios.
  - 30 percent of the unfilled slots go to teaching hospitals in the top 10 states with primary care shortages and rural areas.
- New rules are established for the transfer of training slots from closed hospitals to other institutions.

[a] The cut only applies to slots that were not filled in the previous 3 years.

[b] Some teaching hospitals are exempt, including new training sites in the midst of building their programs.

SOURCES: Baumann et al., 2004; COGME, 2013; Congressional Research Service, 2010; HRSA, 2011b; HRSA Bureau of Health Professions, 2012; Johns, 2010; MedPAC, 2001; National Health Policy Forum, 2001; Nguyen and Sheingold, 2011; Rich et al., 2002; Roth and Yolin, 2011; Wynn and Kawata, 2002.

physicians to treat a wide range of patients—many of whom are under age 65 and not eligible for Medicare coverage.

The mechanics and implications of the Medicare formulas are discussed below.

Direct GME Payment Method

The DGME payment for an individual institution is calculated by multiplying three factors (Wynn et al., 2006):

Weighted resident count * Per-resident amount * Medicare bed-day ratio

(1) **Weighted resident count:** A 3-year rolling average of the hospital's weighted number of full-time equivalent (FTE) residents in accredited programs in the most recent 3-year period (after taking into account the cap on allopathic and osteopathic residents).[4] "Weighted" refers to the following: Only trainees in their initial residency period (i.e., the minimum time required for board eligibility or 5 years, whichever is shorter) are counted as 1.0 FTE. Other residents or fellows are counted as 0.5 FTE.

(2) **Per-resident amount (PRA):** A dollar amount calculated by dividing the individual hospital's base year (i.e., 1984 or 1985) DGME costs by the weighted residents count (adjusted for geographic differences and inflation).

(3) **Medicare day ratio:** The ratio of the hospital's Medicare inpatient days to total inpatient days (to approximate Medicare's share of the training costs).

Per-Resident Amount

Because the PRA calculation is based on hospital costs in the mid-1980s, the DGME calculation is tied to a 30-year-old payment scale that has little relevance to today's health care delivery system or current residency training programs. It also perpetuates significant inequities in GME payments among hospitals, localities, and geographic regions (Fryer et al., 2001).

As noted in Box 3-1, Congress has taken several steps to reduce hospital-to-hospital variation in the PRA. It established a floor and ceiling on

[4] Only residency programs accredited by the Accreditation Council for Graduate Medical Education, Council on Osteopathic Postdoctoral Training, Commission on Dental Accreditation of the American Dental Association, or Council on Podiatric Medical Education of the American Podiatric Medical Association are eligible for Medicare, Medicaid, and other federal funding. Chapter 4 describes the role of accreditation in the governance of GME funding.

hospitals' PRAs in the Balanced Budget Refinement Act (BBRA) of 1999 by mandating that a hospital's PRA could not be less than 70 percent of the level of the national average PRA. In 2000, the Benefits Improvement and Protection Act[5] raised the minimum to 85 percent and it remains at that level today. The BBRA also eliminated the inflation adjustment for PRAs that were more than 140 percent of the locality-adjusted national average for 2 years; the Medicare Prescription Drug, Improvement, and Modernization Act extended that freeze through FY 2013. In 2008, the national average PRA was $98,846 (Wynn et al., 2013).

As the above formula indicates, the hospital's PRA, weighted count of residents, and ratio of Medicare inpatient days to total inpatient days together determine the amount of DGME funds that each institution receives. Table 3-2 shows the average of each component of the DGME formula for different categories of teaching institutions based on geographic area, the number of residents on staff, and the low-income patient percentage (LIPP). On average, hospitals are paid 37 percent of their PRA for each ("adjusted") resident FTE. However, there is considerable variation in the percentage of Medicare bed-days across hospitals and this factor significantly impacts an institution's aggregate DGME funding. Safety net hospitals (i.e., those with a high LIPP), for example, tend to have relatively low Medicare ratios and, thus, low Medicare DGME PRAs. In 2008, the average Medicare PRA for safety net hospitals with the highest LIPP (65 percent or greater), was only $25,306, while for hospitals with a 15 to 25 percent LIPP the average was $46,857, more than 85 percent higher.

IME Payment Method

All acute care hospitals are paid a fixed diagnosis-related group (DRG) payment rate for each Medicare discharge based on each patient's DRG assignment. In teaching hospitals, the DRG payment is increased by the IME adjustment factor.[6] IME is one of several adjustments to Medicare DRG payments. Other adjustments address differences in local wages, disproportionate share of low-income patients, extraordinary high-cost cases, and other factors. The underlying assumptions in the IME payment adjustment are that residency training reduces a hospital's productivity (efficiency)—thus increasing the costs of providing services—and that the Medicare program should pay for the higher spending. The IME amount was intended as a proxy for these costs.

When the IME operating adjustment was first established in law, it

[5] Public Law 106-554.

[6] See Nguyen and Sheingold (2011) for a more detailed and comprehensive description of the Medicare IME adjustment.

TABLE 3-2 Per-Resident Amounts and Medicare Share by Hospital Characteristic, 2008

Hospital Characteristic	Number of Hospitals	Number of Residents	Average PRA	Medicare Share of Days (%)	Medicare Share of the PRA ($)
All hospitals	1,103	97,067	$98,846	37.0%	$36,556
Geographic area					
Large urban	671	71,481	102,261	35.9	36,751
Other urban	379	24,414	89,820	39.8	35,737
Rural	53	1,171	86,218	48.6	41,903
Number of FTE residents					
0<10	294	1,241	95,644	42.5	40,612
10<25	222	3,808	96,243	47.3	45,506
25<100	309	15,607	95,791	44.2	42,343
>=100	278	76,412	99,696	34.9	34,762
Low-income patient percentage					
0<15	260	11,025	93,180	30.8	28,669
15<25	293	16,109	95,927	48.8	46,857
25<50	384	44,836	97,221	39.3	38,247
50<65	79	14,098	103,698	32.9	34,141
>=65	87	10,999	108,789	23.3	25,306

NOTE: FTE = full-time equivalent; PRA = per-resident amount. Excludes 38 hospitals that had reported GME costs but did not receive direct graduate medical education payments based on a current year resident.

SOURCE: Wynn et al., 2013. (c) RAND Corporation. Reprinted with permission.

was based on an analysis of spending differences between teaching and non-teaching hospitals (Nguyen and Sheingold, 2011). At that time, the evidence suggested "teaching intensity" (as measured by the resident-to-bed ratio) and a large proportion of low-income patients were both significantly associated with higher spending per Medicare discharge. There was concern that the new DRG payment system might underpay and, thus, harm teaching hospitals. More recently, two analyses have raised questions about these assumptions. The Medicare Payment Advisory Commission (MedPAC) has concluded that the current 5.5 percent is more than twice the level indicated through multivariate regression analysis of the teaching effect on hospital Medicare costs per discharge (MedPAC, 2010). In their later study, Nguyen and Sheingold (2011) came to similar conclusions.

Medicare makes a different IME adjustment to its payment for capital-related spending. This adjustment is set administratively based on a multivariate regression analysis of the teaching effect on total spending per discharge. The formula specifies teaching intensity differently, and because the capital IME adjustment is based on the measured effect of teaching, the adjustment is smaller. The capital-related IME payments are approximately 5.0 percent of total IME payments to acute care hospitals.

Specialty Hospitals

Specialty hospitals with GME programs—including children's hospitals, psychiatric facilities, rehabilitation hospitals, long-term care hospitals, and critical access hospitals—are eligible for Medicare DGME payments under the same rules as acute care teaching hospitals. However, the IME adjustment for specialty hospitals differs by the type of facility. Among the hospitals paid under a prospective payment system, rehabilitation and psychiatric hospitals and units receive an explicit IME adjustment; long-term care hospitals do not. Medicare pays children's and cancer hospitals on a reasonable cost basis so that any higher costs that these facilities occur for teaching activities are included in the costs that Medicare uses to determine its reimbursement rate for services provided to Medicare beneficiaries. Medicare pays critical access hospitals[7] for most inpatient and outpatient care at 101 percent of reasonable costs, including any costs attributable to teaching activities.

Cap on Number of Medicare-Funded Training Slots

Until the enactment of the Balanced Budget Act (BBA) of 1997,[8] Medicare support of GME was open-ended (Iglehart, 1999). Before the Act, hospitals had a potent financial incentive to add new residency slots because each new position generated additional Medicare PRA and IME revenues (MedPAC, 2003). In response to concerns about an oversupply of physicians[9] and increasing Medicare costs, the BBA[10] capped the number of Medicare-supported physician training slots (MedPAC, 2003; Salsberg et al., 2008). Hospitals are free to add residents beyond their cap, but these trainees do not generate additional Medicare revenues. The cap on Medicare

[7] Critical access hospitals are small rural hospitals that have an average annual length of stay of 96 hours or less.

[8] Public Law 105-33.

[9] As Chapter 2 describes, in the 1990's there were widespread concerns that the nation faced a significant surplus of physicians.

[10] The cap on GME funded training slots was just one of many provisions in the BBA of 1997 intended to curtail Medicare spending.

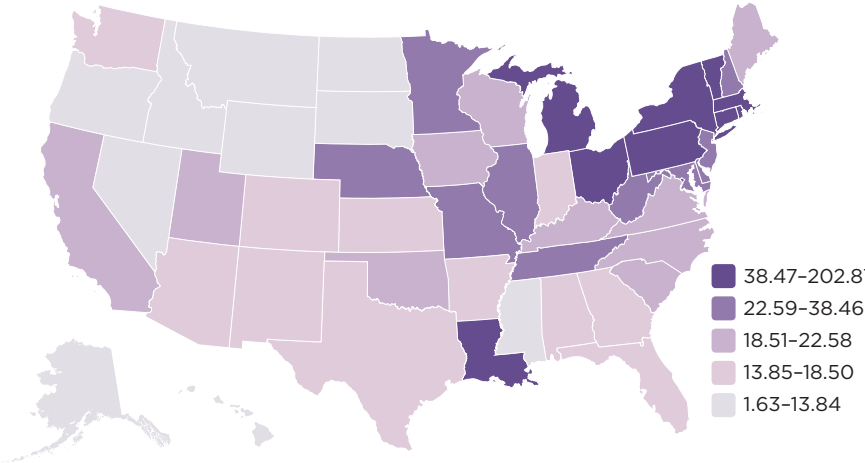

FIGURE 3-2 Number of Medicare-funded training positions per 100,000 population, 2010.
SOURCE: Mullan et al., 2013.

funding was set at each hospital's resident count in the cost report period ending on or before December 31, 1996. With this step, the geographic distribution of Medicare-supported residencies was essentially frozen in place without regard for future changes in local or regional health workforce priorities or the geography or demography of the U.S. population. As Figure 3-2 illustrates, Medicare-supported slots are most highly concentrated in the Northeastern states, as is most of Medicare GME funding.

Hospitals without residency programs can obtain Medicare-funded training slots if they develop newly accredited teaching programs. After 5 years, Medicare then caps the hospital's slots at the highest total number of residents for all specialty programs during that period. Only hospitals with programs created on or after January 1, 1995, are eligible to add slots in this way.[11] After the cap is implemented, rural hospitals already receiving Medicare funding cannot increase funded slots for their existing program(s) but can receive additional Medicare-funded slots for any newly approved specialty programs.

The cap on training slots and its impact on the capacity of the GME system have stimulated vigorous debate (Goodman and Robertson, 2013; Green et al., 2013; Grover and Niecko-Najjum, 2013; Iglehart, 2013; Kirch

[11] See the following sources for further details on Medicare rules regarding the cap: CMS, 2013; Roth and Yolin, 2011.

et al., 2012). There are concerns, for example, that limiting Medicare GME subsidies in this way constrains the total number of available training positions and, thus, the production and national supply of physicians (as was the cap's original intent). The evidence suggests otherwise, however. Many hospitals have expanded their teaching programs despite the cap. Teaching hospitals have added nearly 17,000 slots[12] since the BBA limits were first implemented, an increase of about 17 percent (Brotherton and Etzel, 2013; Salsberg et al., 2008). There is no way to know whether the growth in GME positions would have been significantly greater, as some argue, without the caps. However, the available evidence shows that, for the last decade, the number of training positions has grown at the same pace as the period before the caps (Chandra et al., 2014).

Legislative attempts have been made to redistribute Medicare-funded training slots, but such efforts focused on reallocating vacant slots rather than changing the overall geographic distribution of Medicare GME support. In 2003, the Medicare Prescription Drug, Improvement, and Modernization Act[13] sought to redistribute 3,000 unused Medicare-funded slots (CMS, 2004). Although the top priority for the redistribution was to expand training in rural areas, the impact on training in rural areas was minimal. Less than 3 percent of the redistributed positions were in rural areas and, of the 304 hospitals given additional slots, only 12 were rural institutions (Chen et al., 2013). More recently, the Patient Protection and Affordable Care Act (ACA)[14] redistributed 65 percent of vacant, Medicare-funded slots and established rules for redistributing them to primary care and general surgery programs in states with low resident-to-population ratios (Roth and Yolin, 2011).

Medicare GME Payments to Non-Hospital Settings

As Figure 3-1 illustrates, most of the Medicare GME funding is distributed to teaching hospitals because that is where most clinical training takes place. Though GME programs may be sponsored by a teaching hospital, medical school, or educational consortium, Medicare funds are paid to the sites where training occurs and those organizations have direct fiduciary control over the use of the funds, whether they are the sponsor of the GME program or serve as an affiliate that "hosts" resident rotations.

Approximately 70 percent of Medicare GME funds are distributed

[12] The 17,000 slots are for Accreditation Council for Graduate Medical Education–accredited positions; data on the growth in osteopathic and non-accredited training slots are not available.

[13] Public Law 108-173. Also referred to as the Medicare Modernization Act.

[14] Public Law 111-148.

to acute care hospitals via the IME adjustment; the balance is distributed through the DGME payments (see Table 3-1). Non-hospital training sites may be eligible to receive DGME payments if they incur most of a residency program's costs; in contrast, hospitals may be eligible to receive DGME payments for residents that rotate to non-hospital settings if the hospital pays for all or most of the resident's training costs. Thus, community-based ambulatory care sites and other non-hospital sites are eligible for significantly less funding than teaching hospitals. Non-hospital teaching sites may well be faced with the types of additional training-related experiences that IME was created to address, but they are not eligible for these payments because they do not receive DRG payments.

In the context of this financial disincentive toward non-hospital training, it should be noted that the vast majority of clinical training occurs in teaching hospitals—even for primary care residencies. As Chapter 2 described, there is a striking mismatch between the sites where residents are trained compared with the sites where they are likely to spend most of their careers (Sisson and Dalal, 2011). As Table 3-3 shows, in academic year 2012-2013, teaching hospitals sponsored almost half (49.9 percent) of all residency programs and about half of all residents (52.1 percent) trained in programs sponsored by teaching hospitals. Institutions with multiple programs sponsored the vast majority of residency programs (96.1 percent). Community hospitals and ambulatory care settings sponsored less than 1.0 percent of residency programs and residents.

The ACGME views sponsoring organizations as the entities with the ultimate responsibility—both financial and academic—for residency programs.[15] Medicare payments, however, are not aligned, in that funds are provided to the teaching site, rather than to the sponsoring organization. Often the sponsoring organization is a teaching hospital with residents learning on site and thus receiving Medicare funds directly. However, some sponsors of GME (i.e., those that are not teaching hospitals, or teaching hospitals that utilize affiliated training sites) do not have the fiscal control needed to select training sites based on curricular needs.

[15] The Accreditation Council for Graduate Medical Education (ACGME) defines a GME sponsoring institution as an "organization (or entity) that assumes the ultimate financial and academic responsibility for a program of GME. The sponsoring institution has the primary purpose of providing educational programs and/or health care services (e.g., a university, a medical school, a hospital, a school of public health, a health department, a public health agency, an organized health care delivery system, a medical examiner's office, a consortium, an educational foundation)" (ACGME, 2013, p. 9). The American Osteopathic Association (AOA) defines sponsoring organizations as "base institutions which conduct AOA-approved training programs and issue trainee contracts"; these included hospitals, federally qualified health centers, community teaching health centers, freestanding ambulatory accredited surgery centers, and colleges of osteopathic medicine (AOA, 2012).

TABLE 3-3
Number and Percentage of GME Sponsoring Institutions, by Institution Type, Multi-Program and Single-Program Sponsors, Academic Year 2012–2013

	Programs		Residents		Sponsors	
	Number	Percent	Number	Percent	Number	Percent
Multi-Program Sponsors						
All multi-program sponsors	9,276	100.0	112,780	100.0	437	100.0
General/Teaching Hospital	4,627	49.9	57,745	51.2	255	58.4
Medical School - LCME UMC	3,304	35.6	41,322	36.6	80	18.3
Other	526	5.7	5,475	4.9	21	4.8
Consortium of Hospitals	430	4.6	5,306	4.7	11	2.5
Children's Hospitals	231	2.5	1,972	1.7	11	2.5
Other Specialized Care	64	0.7	432	0.4	6	1.4
Ambulatory Care Clinic/Office	40	0.4	156	0.1	3	0.7
Other Specialized Hospital	17	0.2	225	0.2	13	3.0
Office	14	0.2	13	0.0	13	3.0
Community Hospital or Independent Medical Center	7	0.1	85	0.1	9	2.1
Federally Qualified Health Center	1	0.0	29	0.0	1	0.2
Unknown	1	0.0	7	0.0	1	0.0

Single-Program Sponsors						
All single-program sponsors	369	100.0	5,322	100.0	313	100.0
General/Teaching Hospital	183	49.6	3,573	67.1	154	49.2
Other	66	17.9	536	10.1	62	19.8
Ambulatory Care Clinic/Office	26	7.0	143	2.7	23	7.3
Children's Hospital	19	5.1	295	5.5	7	2.2
Other Specialized Hospital	17	4.6	225	4.2	13	4.2
Pathology Lab/Medical Examiner's Office	14	4.0	13	0.0	13	4.0
Office	14	3.8	13	0.2	13	4.2
Medical School - LCME UMC	14	3.8	241	4.5	11	3.5
Federally Qualified Health Center	1	0.3	29	0.5	1	0.3
Unknown	1	0.3	7	0.1	1	0.3

NOTE: LCME UMC=Liaison Committee on Medical Education University Medical Center.

SOURCE: Data drawn from ACGME, 2013.

MEDICAID

Medicaid regulations do not recognize specifically—although the Centers for Medicare & Medicaid Services (CMS) does allow—GME as an approved component of inpatient and outpatient hospital services (CMS, 2007). If a state Medicaid program opts to cover GME costs, the federal government provides matching funds.[16] The only mechanisms that states have for distributing Medicaid funds for GME are through add-ons to inpatient or outpatient payments or by incorporating GME support into Medicaid managed care capitation rates (CMS, 2007; Heffron, 2012). States have considerable flexibility in how they use Medicaid funds for GME purposes, including which professions and which settings and organizations are eligible to receive support for health professions education (CMS, 2007; COGME, 2004; GAO, 1997; Herz and Tilson, 2009). In 2007, CMS issued a Proposed Rule to end federal matching funds for all Medicaid GME payments, citing inconsistency with federal statute (Herz and Tilson, 2009). However, after a number of moratoriums imposed by Congress, as well as a Sense of the Senate resolution, the rule was not implemented (Henderson, 2010).

Because the federal government does not require separate reporting for Medicaid GME expenditures and most Medicaid funding is subsumed in payment for patient services, quantifying the overall level of Medicaid GME payments is problematic. Policy makers—including CMS Medicaid officials—look to privately sponsored surveys of state Medicaid programs for estimates of spending data.[17] Unless otherwise indicated, the data in this section draw from a 2012 survey sponsored by the Association of American Medical Colleges (AAMC) (Henderson, 2013). Data from previous years are available from AAMC.[18]

Medicaid GME Spending

In 2012, 43 state Medicaid programs[19,20] distributed approximately $3.87 billion to support local graduate medical education, primarily sponsored by teaching hospitals (Henderson, 2013). The number of participating states has declined in recent years. In 2005, for example, all but three

[16] The Medicaid program is jointly funded by the states and the federal government. The federal government's share of Medicaid expenditures in each state depends on the state's per capita income. In 2012, the federal matching percentage ranged from 50 to 74 percent (Kaiser Commission on Medicaid and the Uninsured, 2012).

[17] Although CMS enhanced its reporting system to help identify Medicaid GME expenditures in October 2010, the states appear to have had mixed success in using it.

[18] The surveys of state Medicaid programs are available at https://www.aamc.org.

[19] Includes the District of Columbia.

[20] Medicaid GME estimates include the federal and state shares.

state Medicaid programs provided GME support. Since then, several states have ceased—or reported that they are considering ending—Medicaid GME funding because of budgetary constraints (Henderson, 2006, 2010, 2013). Massachusetts, for example, discontinued its Medicaid GME program in 2010 as a cost-saving measure (Spero et al., 2013). Three years earlier the state tried to leverage Medicaid funds to expand primary care and psychiatry residencies with higher GME payments, but the incentive program was not successful in stimulating expansion in training slots in these specialties.

Despite the recent decline in participating states, aggregate Medicaid GME spending increased by about $1.5 billion (63 percent) from 1998 to 2012 (Henderson, 2013). Of those states participating in Medicaid GME, the amount of funding varies widely in total and on average per hospital or per resident. New York funding—$1.82 billion in 2012—dwarfs that of any other state. In 2012, New York accounted for nearly half (46.9 percent) of the nation's total Medicaid GME spending and more than 10 times any other individual state. New York also directs more Medicaid dollars per teaching hospital ($20.9 million) and per resident ($115,500) than other states. In contrast, Michigan, the next highest state funder, paid $163.1 million ($3.1 million per teaching hospital; $33,500 per resident).

Medicaid GME funding exceeded $100 million in only seven other states in 2012—Virginia ($142.0 million), Pennsylvania ($124.2 million), North Carolina ($115.7 million), Arizona ($113.0 million), Washington ($111.0 million), South Carolina ($110.7 million), and Missouri ($110.1 million). In three of these states (North Carolina, South Carolina, and Washington), Medicaid GME funding exceeded Medicare GME funding.[21] Spending in other states ranged from $375,000 in Alaska to $90 million in New Jersey.

Some of the non-participating states have GME programs sponsored by other state agencies. For example, California's Song-Brown Program provides financial assistance to family practice residencies as well as family nurse practitioner, physician assistant, and registered nurse education programs throughout the state (California Office of Statewide Health Planning & Development, 2014).

Eligible Trainees

Although Medicare GME subsidies are limited to physicians, dentists, and podiatrists, states may use Medicaid funds for other clinicians. In 2012, 12 states used Medicaid funds to support training of other health care professionals, including advanced practice nurses, physician assistants,

[21] Committee comparison of Henderson and 2011 Medicare cost report data.

emergency medical technicians, chiropractors, dentists, pharmacists, and laboratory personnel (Henderson, 2013).[22]

Support of State Workforce Goals

Many states report that they invest Medicaid funds in GME in order to produce more physicians overall or in specific specialties, geographic areas, or clinical settings (Henderson 2013), presumably with the expectation that the trainees will remain in the state after graduation (COGME, 2004; Henderson, 2010, 2013; Spero et al., 2013). Many states also report shortages of physicians who are willing to serve Medicaid beneficiaries. However, there is little evidence that states have been able to effectively leverage Medicaid GME funds to achieve policy objectives. In a series of recent interviews with Medicaid officials in 14 states, Spero and colleagues (2013) found that teaching hospitals were free to choose how to use Medicaid GME funds, and few states coordinate GME decisions regarding the number, location, or specialty of new residency positions.

Several states have experimented with multi- or all-payer GME financing to promote state clinical workforce goals (COGME, 2004).

HEALTH RESOURCES AND SERVICES ADMINISTRATION

HRSA is the central federal agency responsible for promoting the production and training of the health care workforce, particularly for underserved populations. All but one of the HRSA GME-related funding programs—the Children's Hospitals Graduate Medical Education (CHGME) program—focus on expanding residency training in primary care. These include the Teaching Health Centers (THCs) for training of primary care physicians in community settings, the National Health Service Corps (NHSC), and several Title VII grants programs.

Children's Hospitals GME

Federal support of residency training in pediatrics varies substantially according to the setting in which the training occurs. If the pediatric residency is based primarily in a general teaching hospital, or in a children's hospital within a larger health care system, the trainees are supported according to the Medicare GME payment rules described in this chapter. Freestanding children's hospitals do not receive much Medicare support because, as noted below, Medicare GME funding is linked directly with an

[22] The 12 states are Colorado, Indiana, Iowa, Kansas, Louisiana, Minnesota, Mississippi, Ohio, Pennsylvania, South Carolina, Virginia, and Wisconsin.

institution's Medicare patient volume. Children's hospitals play a significant role in the training of the nation's primary and subspecialty pediatricians—an estimated 29 percent of general pediatric residents and 44 percent of pediatric medical and surgical subspecialty trainees in academic year 2009-2010 (HRSA, 2013b). In addition, children's hospitals are considered safety net hospitals as they serve a large number of Medicaid and uninsured patients and provide charity care (HRSA, 2013a).

The CHGME Payment Program was established by Congress in 1999 to help compensate for this discrepancy (Public Law 106-129). As noted in Box 3-1, the program has been reauthorized, most recently in 2011. It is administered by HRSA's Bureau of Health Professions (HRSA, 2011a; HRSA Bureau of Health Professions, 2010).

CHGME Payment Methodology

Unlike Medicare GME, the total CHGME funding is determined by annual discretionary appropriations. In addition, the relative proportion of DGME and IME payments is set in statute. Regardless of the amount of the annual appropriation, DGME funding must be one-third, and IME, two-thirds of the total amount (HRSA, 2013b). Available funds are allocated to individual hospitals based on the Medicare GME payment formulae (HRSA Bureau of Health Professions, 2011). There are separate DGME and IME funding streams: DGME payments cover the direct cost of GME such as stipends and benefits for residents and faculty. IME payments are intended to cover the increase in clinical expenses associated with sponsoring a training program. Also like Medicare, the DGME per-resident amount is weighted by a factor of 1.0 for trainees in their initial residency and .5 for trainees beyond their initial residency period.

CHGME funding is considerably less stable than the GME funding provided by Medicare. For example, the FY 2013 CHGME sequestration budget of $251 million is more than 20 percent less than the appropriations for FY 2010, the program's peak funding year. Table 3-4 shows the annual appropriations for CHGME since the program's inception in 2000 through 2013. Eligible hospitals must apply for the funds each year and the amount of available funding varies with the annual discretionary appropriation. In recent years, the President's budget has either called for a significant reduction or complete elimination of CHGME funding (AAMC, 2013; HRSA, 2011b). In 2013, HRSA's proposed budget called for eliminating the IME portion of the CHGME payment, a potential $177.2 million cut in funding from the previous year (HRSA, 2013a). When this report was drafted, the future of the program was uncertain (Wong et al., 2013).

TABLE 3-4 CHGME Appropriations, 2000–2013

Fiscal Year	Appropriation ($ in millions)
2000	$40.0
2001	235.0
2002	285.0
2003	290.1
2004	303.2
2005	300.7
2006	297.0
2007	297.0
2008	301.7
2009	310.0
2010	317.5
2011	268.4
2012	265.1
2013	251.2

SOURCES: HRSA, 2013b,c.

National Health Service Corps

Although the NHSC does not provide direct funding for residency training, it is an important source of financial support for the training of physicians and other health professionals and a potentially effective lever in directing physicians toward primary care practice in health professional shortage areas. Administered by HRSA's Bureau of Clinician Recruitment and Service, NHSC provides scholarships to medical students and loan repayment to those who have finished their training if they commit to practicing primary care for a specified duration (HRSA Bureau of Clinician Recruitment and Service, 2013). The eligible physician specialties are family practice, general internal medicine, general pediatrics, general psychiatry, geriatrics, internal medicine/family practice, internal medicine/pediatrics; obstetrics and gynecology, and psychiatry. Physician assistants, dentists, dental hygienists, nurse practitioners, certified nurse-midwives, and behavioral health professionals are also eligible to participate.

The programs include

- The NHSC Scholarship Program pays up to 4 years of medical school tuition, fees, and other educational costs to primary care providers who agree to serve 2-4 years at an approved site in an underserved area.
- The NHSC Loan Repayment Program pays off qualifying educational loans for already trained primary care physicians who make a commitment to practice in a health professions shortage area. Participating physicians can receive up to $50,000 in tax-free loan repayment in exchange for 2 years of service and up to $140,000 for 5 years of service (HRSA Bureau of Clinician Recruitment and Service, 2013).
- The NHSC State Loan Repayment Program provides matching grants to states that administer their own loan repayment programs.
- The Students to Service Loan Repayment Program pays off loans up to $120,000 for fourth-year medical students (M.D. and D.O.) in exchange for providing primary care services for at least 3 years of full-time or 6 years of half-time service in health professional shortage areas (HRSA Bureau of Clinician Recruitment and Service, 2013).

In 2013, more than half of the NHSC scholars in the pipeline were minorities (18 percent Hispanic; 18 percent African American; 13 percent Asian or Pacific Islander; and 2 percent American Indian or Alaskan Native) (HRSA Bureau of Clinicial Recruitment and Service, 2013).

The ACA permanently reauthorized the NHSC and established a $1.5 billion trust fund to provide additional funding for the NHSC for a 5-year period (NACHC, 2010). The trust fund is a one-time supplement to NHSC's existing discretionary funding. From 2009 through 2011, the NHSC received a one-time $300 million supplement to expand loan repayments (Pathman and Konrad, 2012).

Teaching Health Centers

One of the key workforce provisions of the ACA was the creation of the Teaching Health Center GME program. The program is a 5-year initiative intended to expand the number of residents in primary care medicine and dentistry training in community-based, ambulatory care settings. Eligible GME programs include family medicine, internal medicine, internal medicine-pediatrics, obstetrics and gynecology, psychiatry, geriatrics, and general and pediatric dentistry (HRSA Bureau of Health Professions, 2012).

TABLE 3-5 Selected Data on Teaching Health Center (THC) Funding, Fiscal Years 2011–2013

Fiscal Year	Total Funding (millions)	Number of			
		Funded THC Organizations*	Funded Residency Programs	Participating Residents	States with One or More Center
2011	$2.4	11	11	63	11
2012	$12.5	19	22	141	15
2013	$28.3	32	45	333	21

*Refers to the THC sponsoring organizations, which may oversee residencies in multiple sites.

SOURCE: HRSA, 2013d; data on number of participating residents were compiled by Candice Chen, Assistant Research Professor in the Department of Health Policy, Milken Institute of Public Health at the George Washington University, and were provided by Katie Weider, Senior Research Assistant, August 2, 2013 (personal communication).

HRSA administers the THC grant awards and distributes the residency training funds directly to the participating sponsoring organizations. Eligible entities include federally qualified health centers, community mental health centers, rural health clinics, health centers operated by the Indian Health Service, and other ambulatory centers that receive funds under Title X of the Public Health Service Act. To date, most of the awardees have been residency programs in family medicine (HRSA, 2013d).

The number of THCs and THC physician trainees has grown steadily since 2011, when the first HRSA awards were granted (see Table 3-5). In fiscal year (FY) 2013, 45 residency programs training 333 residents in 21 states were supported by THC awards (HRSA, 2013d). Appropriations were authorized only from FY 2011 through FY 2015 and are reconsidered by Congress each year during that period. The long-term prospects of the program are uncertain. As a result, existing or prospective THCs may find it difficult to recruit future trainees without some assurance of future funding, because it takes 3 or more years to complete a residency program (Spero et al., 2013).

THC Payment Methodology

Like Medicare GME, THC funding is formula based and eventually will include separate fund flows for direct and indirect expenses (HRSA Bureau of Health Professions, 2012). In contrast to Medicare, which distributes GME funds directly to teaching hospitals, HRSA distributes the THC funds to the community-based training sites.

All eligible THC applicants are funded. Initially, HRSA is paying grantees an interim payment amount of $150,000 per full-time resident per year (covering both direct and indirect costs). The method for determining the IME and DGME payments was under review by the U.S. Department of Health and Human Services when this report was drafted. Once the methods are finalized, THCs will be paid according to the new formula.

Although the ACA authorized start-up grants to help eligible health centers develop new primary care training programs, Congress has not appropriated the funds to support such activities (MedPAC, 2011).

Title VII Health Professions Programs

HRSA also administers several Title VII grants programs that provide modest support for residency programs in primary care, pediatric medical and surgical subspecialties, preventive medicine and public health, geriatrics, and rural areas (HHS, 2011; Phillips and Turner, 2012; Reyes-Akinbileje, 2013).

VETERANS HEALTH ADMINISTRATION

Education and training of health professionals is a statutory and core mission of the VHA (VHA Office of Academic Affiliations, 2012; VHA, 2008). As a whole, VHA health facilities comprise the nation's largest single provider of clinical training in the United States. More than 100,000 health professionals—including physicians, nurses, and more than 40 other types of trainees—receive a portion of their training at a VHA facility each year (VHA Office of Academic Affiliations, 2012; VHA Office of Academic Affiliations, 2009). In 2012, an estimated 37,800 residents rotated through VA facilities (10,249 FTEs).[23] Nationwide, nearly one in 10 funded GME residency positions are at a VHA facility (Chang, 2012). Nearly all of the residency programs utilizing VHA training sites are sponsored by an affiliated medical school or teaching hospital rather than by the VHA.

In FY 2012, the VHA paid its academic affiliates an estimated $621 million in direct GME payments and distributed $816 million in funding to VHA medical centers for the indirect costs of training physicians and other health professionals (see Table 3-1). (Estimates of the indirect costs attributable solely to physician training are not available.)

VHA GME funding comes solely from the agency's annual appropriations. The VHA receives no Medicare funding by law, and VHA health care providers are not permitted to bill Medicare for patient services and thus

[23] Personal communication, Barbara K. Chang, Director of Medical and Dental Education, VHA Office of Academic Affiliations, July 15, 2013.

cannot receive any Medicare GME funding. However, the VHA is able to bill private insurers for services provided by residents if the patient's condition is not connected to military service.

VA Affiliation Agreements

VHA affiliation agreements with medical schools and sponsoring organizations accredited by the Accreditation Council for Graduate Medical Education (ACGME) are central to the funding and operations of residency training in VHA facilities (VHA Office of Academic Affiliations, 2009). Because the VHA no longer sponsors residency programs, it looks to its affiliates to provide physician trainees who rotate through VHA facilities. In 2011, 124 VHA hospitals and 3 VHA independent outpatient clinics had affiliation agreements with 151 allopathic and osteopathic medical schools for medical student and physician education (VHA Office of Academic Affiliations, 2012). The affiliation agreements, although fundamentally local in nature, are circumscribed by VHA directives (VHA, 2008, 2012).[24]

VA Payment Methods

The VHA's funding methodology differs markedly from Medicare's approach (Chang, 2012). Direct GME payments are based on current costs and are paid either through a disbursement agreement with the sponsoring organization or directly to residents. Accredited residency and fellowship years are fully funded. Reimbursable direct costs include resident stipends, fringe benefits, and some individually approved items such as housing, parking, and lab coats or uniforms. There are statutory prohibitions against paying for salaries and benefits for GME staff based at an affiliate; affiliates' administrative costs; and resident licensing fees, malpractice insurance, resident board exam fees, and other items.

The VHA tracks DGME spending to ensure that the funds are not used by its health care facilities for any purpose other than graduate medical education. Unused funds must be returned to the Office of Academic Affiliations (Chang, 2012).

The VHA uses the Veterans Equitable Resource Allocation (VERA) System to allocate most of its appropriations for health care services (GAO, 2011). VERA is a centrally driven, formula-based system that determines the appropriate allocation for each of the VHA health care networks, the Veterans Integrated Service Networks or VISNs. The VISNs in turn distribute the funding to their medical centers, including a centrally determined,

[24] The authority for the conduct of residency training programs in the Veterans Health Administration is contained in Title 38 United States Code (U.S.C.) 7302.

fixed IME amount based on the number of residents at each medical center in the current academic year.

DEPARTMENT OF DEFENSE

The committee was not able to obtain data on the costs and financing of military GME programs. The DoD sponsors about 200 GME programs that train an estimated 3,200 residents annually (Schoomaker, 2012). Each branch of the military—the Air Force, Army, and Navy—operates its own residency programs. Residents are assigned to training slots via a military-specific match system (Durning et al., 2012). The composition and size of the training pool is directly related to the extent of military deployment and the end strength that is required.

THE BLACK BOX OF GME COSTS AND BENEFITS

Remarkably little is known about the individual, institutional, and societal costs of residency training. There are also considerable conceptual challenges in defining and identifying the costs and cost savings related to residents' presence within an institution. The most significant information gaps relate to the impact of GME on the costs of care, particularly regarding the indirect costs and cost savings (and/or revenue) associated with GME. This dearth of information exists, in part, because CMS requires only minimal reporting from teaching hospitals as a condition of receiving funding, despite the nearly $10 billion annual Medicare investment in GME. Federal GME regulations are nearly silent regarding transparency and accountability for use of Medicare GME funds. Medicare statute requires teaching hospitals to report only aggregate DGME costs, the number of FTE trainees (with limited specificity regarding specialty and whether the residents are in their initial residency period),[25] the amount of time residents spend on hospital and non-hospital rotations, and the intern and resident-to-bed ratio (CMS, 2012; Wynn et al., 2006). Sponsors of teaching programs have little incentive to maintain detailed documentation of GME-related expenses because Medicare and Medicaid payment regulations do not require it.

This section reviews the available information on the financial costs and benefits of sponsoring GME programs, focusing on non-VHA institutions. It also draws insights from a series of informal case studies at several major academic medical centers associated with members of the IOM committee (see Box 3-2).

[25] In some cases, counts of primary care, general surgery, and obstetrics/gynecology residents are reported (CMS, 2012).

BOX 3–2
Insights from the Institute of Medicine (IOM) Case Studies

The dearth of graduate medical education (GME) cost and revenue data is a barrier to any effort to understand the financial dynamics of residency training—including this IOM study. Early in its deliberations, the committee organized a small subcommittee to investigate what it could learn by interviewing and collecting de-identified GME cost and revenue data from each of four academic medical centers. It was apparent at the outset that any results from this informal inquiry with a small sample size could not be generalized to other GME programs. Thus, the objective of this inquiry was threefold:

1. To learn whether teaching institutions could readily produce comprehensive cost and revenue data for their residency programs;
2. To identify the principal elements of GME costs and revenues (or cost savings); and
3. To examine differences across specialties and sponsoring organizations.

The IOM staff collected cost and revenue data from three training programs at a sample of four sponsoring organizations and reviewed the data with senior staff at each institution. The specialties included a primary care residency (family medicine, general internal medicine, or pediatrics), a urology residency, and another subspecialty (gastroenterology, orthopedic oncology, orthopedic surgery, or vascular surgery).

The following summarizes the insights from this effort.

- The bottom-line impact of sponsoring individual residency programs is not well understood.
- It is common for GME program staff to have little knowledge of or control over how GME funds flow within their own institutions. Because GME funds are not regarded as sufficient to cover costs, administrators see little value in tracking the GME dollars, which will be supplemented from other sources.
- GME financing arrangements vary across not only institutions but also programs within institutions. For example, faculty practice plans may play a central role in training and supervision of residents. However, the financial relationship between the sponsoring institution and faculty can be an employee–employer arrangement or an individual contract between the hospital and a faculty practice plan.
- Considerable developmental work would be needed to define and measure the data and outcome variables that should be included in an ongoing GME reporting system.

Direct Costs of GME

The DGME cost data that CMS collects from teaching institutions, aggregated across each hospital's sponsored programs, have limited use in a national assessment becauase they are not sufficiently complete or detailed, and are not standardized or audited (Wynn et al., 2006, 2013).

GME cost analysis is further hampered by the fact that teaching hospitals often share the costs of training with one or more affiliated educational partners. The faculty practice plans that provide the faculty and clinical supervisors for residents and fellows may be an organizational component of the teaching hospital, a medical school, or an outside independent organization. In addition, there are various arrangements for compensating attending physicians. For example, the hospital may or may not compensate attending physicians for their time spent in supervising trainees. Attendings may bill third parties for their services, and their clinical income can be influenced up or down by participation in teaching and supervision. The reported data do not reflect these idiosyncratic and often unique arrangements. Moreover, published analyses of residency training costs must be interpreted with caution because they do not take into account financial benefits such as increased patient revenues or contributions to the productivity of faculty or attending physicians (MedPAC, 2010; Nguyen and Sheingold, 2011; Wynn et al., 2013). Thus, the Medicare reported costs do not reflect true net costs.

An assessment of residency training costs appears in a recent report commissioned by MedPAC (Wynn et al., 2013). The study, described by the researchers as "exploratory" because of the data limitations, provides important insights and a useful framework for examining how residency programs affect direct GME and patient care costs. The relevant findings are discussed below.

Components of DGME Costs

The direct, explicit costs of GME are straightforward, and they include expenses related to the compensation of residents, faculty, other program staff, and supervising physicians as well as a range of program-related administrative expenses, fees, materials costs, etc. (see Box 3-3). The nature and extent of these expenses are driven, in large part, by program size, attending physician compensation, malpractice costs, and the accreditation standards set by the ACGME and the Residency Review Committees (RRCs) for each specialty, and the AOA through its Program and Trainee Review Committee and the Specialty College Evaluating Committees (SPECs) for each specialty (ACGME, 2012; AOA, 2012; Wynn et al., 2013). Accreditation standards circumscribe residents' hours and activities and require that certain technological resources be available (e.g., simulation labs, electronic access to medical information, etc.) to support education and clinical activities. Individual training programs must also conform to minimum time commitments, minimum thresholds for specific clinical experiences, and required administrative and clinical faculty-to-resident ratios required by the RRCs. Table 3-6 illustrates the variability in

BOX 3–3
Usual Components of the Direct Costs of Sponsoring GME Programs

The extent to which the program sponsor or affiliated institution(s) pays for the costs of training (described below) varies according to individual affiliation agreements.

Labor Costs

- Salaries, stipends, and fringe benefits for trainees, faculty, graduate medical education (GME) program staff, and attending physicians:
  - Residents' salaries increase with the postgraduate year in which the training occurs and tend to be the same across specialties within an institution.
  - Faculty and other physician compensation varies considerably by specialty.

Fees and Subsidies for Residents Vary Substantially Across Programs and Institutions

- Malpractice insurance
- Conference travel and fees
- Parking, housing, and other subsidies
- License fees
- Outside tuition (e.g., for board review, courses, other degree programs)
- Education allowances (e.g., for texts, laptops)

Program Administration

- Overhead for clinical and non-clinical space
- Resident recruitment costs
- GME accreditation fees
- Retreats
- Orientation programs
- Credentialing
- Faculty development
- Graduation

Educational Materials
Simulation equipment, software, in-training examinations, anatomy lab, etc.

the standards among a group of selected specialties, which helps to explain some of the differences in educational costs.

Residents' compensation The stipends that residents receive tend to be the same across specialties for a given postgraduate training year within

TABLE 3-6 Residency Review Committee Faculty Staffing Requirements for Selected Specialties

Specialty	Administrative Faculty		Clinical/Core Faculty	
	Minimum Hours	Minimum Ratio of Faculty to Residents	Minimum Hours	Minimum Ratio of Faculty to Residents
Internal medicine (IM)	Residency program director: 20 hours per week Assistant directors: 20 hours per week	Assistant directors: • 1 for 24–40 residents • 2 for 41–79 residents • 3 for 80–119 residents • 4 for 120–159 residents • 5 for 160 or more residents	15 hours per week	4 for up to 60 residents 1 more faculty person for every 1-15 additional residents Additional specialty education coordinators are required in 11 IM subspecialties
Cardiology	Program director: 20 hours per week (average)	Not specified	2 clinicians who devote at least 10 hours weekly	If more than 5 fellows: 1 clinician for 1.5 residents
Family medicine	Program director: Must be full-time excluding non-teaching clinical services	Not specified	Full-time	1 full-time equivalent (FTE) for every 6 residents (minimum of 2) 1 supervising physician for 4 residents in continuity clinics
Dermatology	Full-time program director	Not specified	Not specified	1 for 3 residents (is desirable) 2 FTEs (including the program director)
General surgery	Program director: 30 percent	Not specified	Full-time	1 for each chief resident (i.e., PGY-5)
Urology	Not specified	Not specified	Not specified	1 (including program director) for 2 residents
Radiation oncology	1 program director; hours not specified	Not specified	At least 4 FTE faculty who devote their professional time to teaching	Not specified

NOTE: Full-time equals 1,400 hours per academic year; PGY = postgraduate year.

SOURCE: Wynn et al., 2013. (c) RAND Corporation. Reprinted with permission.

an institution. Across institutions there is modest variation, with somewhat more significant regional differences (AAMC, 2012a). Data regarding trainee compensation are available from the Association of American Medical Colleges (AAMC) (which conducts annual surveys of teaching hospitals regarding trainee compensation and fringe benefits) and CMS (AAMC, 2012b; CMS, 2013; Wynn et al., 2013). The stipends increase as trainees advance from one postgraduate year to the next (see Table 3-7). In academic year 2012-2013, mean stipends ranged from $47,898 for first-year residents in Southern states to $65,839 for sixth-year residents in the Northeast (AAMC, 2012a). Most residents also receive health benefits and a variety of other fringe benefits such as annual vacation, paid holidays, subsidized parking and/or housing, and sometimes meals when working. Nevertheless, compared to other health professionals who might provide many of the same services, residents may be an inexpensive source of labor for teaching institutions, particularly for some specialties (Wynn et al., 2013). Some economists argue that if residents weren't contributing more than they cost, then they wouldn't be paid and would instead be charged a tuition (Chandra, 2014).

Faculty compensation Although residents' salaries tend not to vary by specialty, faculty compensation does. In academic year 2010-2011, the median compensation level for full professors at private medical schools was more than $300,000. The range, by specialty, was wide: family medicine, $198,000; geriatrics, $212,000; cardiology, $338,000; anesthesia, $376,000; radiology, $401,000; and orthopedic surgery, $505,000 (Zhang and Wisniewski, 2012). Faculty rank, geographic location, and percentage of billable clinical activity are also important determinants of faculty salaries.

Other factors Wynn and colleagues (2013) examined an array of other factors that might contribute to differences in DGME costs among hospitals. Although data limitations precluded a quantitative analysis, their research suggests that a number of variables are important, including an affiliated academic health center or community-based affiliation, rural or urban location, and the economies of scale that accrue from sponsoring large and/or multiple residency programs (see Table 3-8). For example, training in rural areas and community-based settings appears to be more expensive per resident, particularly if the program is the only residency at the site—a situation typical of family medicine, for example.

The costs of malpractice insurance also drive training costs and vary considerably by specialty (Wynn et al., 2013). Primary care specialties (not including obstetrics) have the lowest premium rates; general surgery physicians, the highest.

TABLE 3-7 Mean Resident/Fellow Stipends by Region, Academic Year 2012-2013

All Respondents[a]	Northeast	South	Midwest	West	All Regions[b]
1st Post-M.D. Year	$53,636	$47,898	$49,309	$49,546	$50,274
2nd Post-M.D. Year	55,705	49,478	50,938	51,917	52,222
3rd Post-M.D. Year	58,394	51,210	52,617	54,492	54,373
4th Post-M.D. Year	60,704	53,103	54,585	57,216	56,536
5th Post-M.D. Year	63,305	55,041	56,712	59,834	58,767
6th Post-M.D. Year	65,839	57,089	58,751	62,099	61,035

[a] Includes four for-profit hospitals.

[b] Includes one medical school in Puerto Rico.

SOURCE: AAMC, 2012a.

Indirect Costs of GME

The extent to which residents have an indirect financial impact on teaching hospitals—and the net direction of this impact—is an unresolved question. Unlike DGME, there are no requirements for teaching hospitals to document IME "costs" and, by definition, indirect costs are challenging to identify and measure. Nevertheless, IME accounts for most of the federal GME outlay (i.e., an estimated $6.8 billion in 2010).

Several factors may contribute to indirect costs of GME, including residents' likelihood to do the following:

- Order more diagnostic tests and procedures than experienced clinicians and take more time to interpret the results;
- Require frequent reorientation to new settings and practices because they rotate among different services and experiences, which would logically impede efficiency; and
- Provide some services that have to be repeated by faculty or supervising physicians (e.g., portions of history taking and physical exams), and provide many services less efficiently than would more experienced clinicians.

Stakeholders also assert that teaching hospitals have broad missions, and that their roles in education, research, and providing care (including as safety net providers) are inextricably intertwined (AAMC, 2011). From this perspective, some argue that the calculation of the indirect costs of teaching should consider not only the inefficiencies related to the presence

TABLE 3-8 Direct GME Costs by Hospital Characteristics, 2008

Hospital Characteristic	Number of Hospitals	Number of Residents	Total GME Costs Per Resident	Total GME Costs: Facility Percentiles		
				25th	50th	75th
All hospitals	1,141	97,577	$141,240	$95,403	$134,803	$177,674
Geographic location						
Large urban	690	71,787	$142,391	$95,382	$133,369	$171,239
Other urban	391	24,603	$137,583	$95,403	$137,971	$190,157
Rural	60	1,186	$147,485	$100,604	$125,786	$189,824
Number of FTE residents						
Less than 10	319	1,314	$145,697	$75,075	$117,199	$197,090
10 to 24	231	3,963	$153,938	$103,270	$142,627	$189,405
25 to 99	313	15,888	$142,077	$106,914	$137,971	$170,703
100 or more	278	76,412	$140,331	$104,128	$136,578	$171,054

Percentage of residents in primary care training						
Less than 25%	165	3,525	$161,779	$77,511	$116,626	$180,391
25 to 49	239	59,802	$132,956	$92,982	$124,292	$154,419
50 to 74	242	22,720	$154,753	$107,448	$139,548	$171,487
75 or more	426	11,082	$153,162	$107,772	$150,490	$199,507
GME affiliations						
Academic health center	828	88,342	$141,269	$98,976	$137,323	$180,336
Community based	292	8,779	$140,073	$88,935	$126,457	$169,777

NOTE: FTE = full-time equivalent.

SOURCE: Wynn et al., 2013. (c) RAND Corporation. Reprinted with permission.

of residents, but also the costs of providing an array of expensive, high-tech, and complex services not available elsewhere (e.g., specialized burn and transplant units) (Koenig et al., 2003). However, others question whether such costs should be subsidized by federal GME programs. From their perspective, the costs are not part of the education process and paying for them, in this way, may encourage inefficiencies. It also creates inequities because teaching hospitals vary in their level of engagement in these activities (Anderson et al., 2001; Koenig et al., 2003; Wynn et al., 2006) and some non-teaching hospitals provide comparable services.

Teaching hospital advocates also assert that they are also more financially vulnerable because they care for large numbers of low-income and sicker, high-cost patients. However, since the prospective payment system was implemented in 1983, refinements have been made to the payment system to address these concerns. Annual refinements to the patient classification system have improved how the system accounts for differences in patient severity and complexity. In particular, Medicare severity-adjusted DRGs, implemented in 2008, had the effect of increasing the average DRG relative weight for teaching hospitals relative to non-teaching hospitals (Wynn, 2008). Second, Medicare has made an additional payment to teaching and other hospitals if they serve a disproportionate share of low-income patients (referred to as the Disproportionate Share Hospital, or DSH, payment). Stakeholders assert that the adjustment is insufficient. Because it has been an adjustment to the DRG rate, the subsidies have been lower for hospitals with fewer Medicare inpatients. Further, the payment formula has not explicitly targeted charity care and other uncompensated care costs. However, the ACA made significant changes to the DSH program in anticipation of the expansion of health insurance. Starting in FY 2014, CMS began to reduce the link with Medicare payment volume by replacing 75 percent of DSH payments with allocations from an uncompensated care pool based on a hospital's share of total uncompensated care costs (America's Essential Hospitals, 2013). The effect of this change will be to increase the subsidies to safety net hospitals with high charity care caseloads relative to other hospitals. As uninsurance rates decline nationwide, the separate DSH payments will be reduced.

Indirect Benefits of GME for Teaching Hospitals

The financial benefits of GME are not tracked or reported, and they are rarely acknowledged when the costs of GME are examined. Institutions may experience lower personnel costs because residents, compared with other clinicians, perform a wide range of services at a low rate of pay and have relatively flexible job descriptions and schedules. For example, in some specialties, fellows can provide on-call services in lieu of fully

trained attending physicians—at significantly lower costs to the hospital. The presence of residency programs may be a signal of higher quality to private insurers and may also result in higher commercial rates. Also, in some circumstances, residents or fellows are likely to enhance the efficiency and productivity of the attending physicians with whom they work. These factors may contribute to significant cost savings for teaching institutions, but the magnitude of such savings is difficult to estimate—much less calculate. They may also lead to additional GME-related revenues. GME-related revenues include the explicit payments that hospitals and their educational partners receive for graduate medical education training, such as from Medicare and Medicaid and HRSA. It also includes patient care revenues that are indirectly related to resident services. For example, more senior residents sometimes generate incremental clinical revenues for hospitals or faculty practices. As residents assume more clinical responsibilities in their later training years, they may increase the number of patient services for which attending physicians can bill.

Net Financial Impact of GME

The committee finds a dearth of available evidence regarding indirect costs and indirect benefits of GME, and thus the net financial impact of GME on teaching institutions is unclear. The restrictiveness of the GME cap offers important insight into the underlying finances of GME. Despite this cap, there has been considerable expansion in training slots. As noted earlier, teaching hospitals added nearly 17,000 new positions to accredited residency and fellowship programs[26] between 1997 and 2012, without any further subsidization by IME or DGME funding (Brotherton and Etzel, 2013; Salsberg et al., 2008). If it is assumed that hospitals would not add the direct and indirect expenses of trainees unless those expenses are offset by gains (which is debatable), such additions above the cap suggest that residents add value in excess of those costs—even with no subsidization (Chandra et al., 2014).

Several studies do suggest that teaching hospitals have higher spending per DRG than community hospitals. However, it is likely that the financial burden associated with GME is significantly less than the current IME adjustment amount, and some analysts question whether Medicare should continue to pay the full amount. MedPAC, for example, has estimated that the IME adjustment is twice its empirically justified level (MedPAC, 2009). Nguyen and Sheingold (2011) came to a similar conclusion. Moreover, these aggregate estimates of indirect expenditures obfuscate substantial differences across individual programs.

[26] Includes only residents in ACGME-accredited residencies.

Research by Wynn and colleagues (2013) suggests that the net financial impact of GME varies considerably, depending on the characteristics of the residency program. Using a variety of information sources, including data from Medicare cost reports, survey data from the AAMC and the Medical Group Management Association, and hospital and cost data from the California Office of Statewide Health Planning and Development, the researchers assessed the relative financial impact of various program characteristics. Table 3-9 provides some of their findings; see the full report for details on their methods and findings (Wynn et al., 2013). The analysis demonstrates substantial differences across specialties. For example, the financial impact (presumably benefit) of the on-call services provided by residents depends on how often the specialty needs on-call services and the alternative cost of compensating a fully trained physician to provide the service. This suggests that the financial benefit of having residents on call in dermatology and radiation oncology is minimal because on-call services are rarely needed. In contrast, surgical residents provide considerable savings to institutions because their services are required frequently and the cost of compensating a fully trained surgeon is significant.

Of the specialties studied by Wynn and colleagues (2013), residents appear to be particularly costly in outpatient settings for family medicine, dermatology, and radiation oncology compared to cardiology, general surgery, and urology.

CONSEQUENCES AND CONCLUSIONS

It is not surprising that the Medicare GME payment system, fixed in statute, has concerned researchers, policy makers, and stakeholders for decades (ACP, 2011; COGME, 2004, 2007; Dower, 2012; Iglehart, 2011; IOM, 1989; Johns, 2010; Ludmerer and Johns, 2005; Macy Study Group on Graduate Medical Education, 1980; MedPAC, 2010; Morris, 1993; Rich et al., 2002; Weinstein, 2011). Their concerns—and the committee's—stem largely from the rigidity of the formulas, the lack of accountability for how the funds are used, the inequities in the distribution of the funds, and the embedded disincentives to train physicians outside of the hospital setting.[27]

This discussion focuses on the committee's conclusions regarding Medicare GME financing because Medicare has the greatest potential leverage for improving GME outcomes.

Table 3-10 describes the unintended consequences of the basic features of Medicare GME financing. Under the status quo, Medicare distributes

[27] See Chapter 2 for a review of the current makeup and characteristics of the residency pipeline and physician workforce. Chapter 4 describes current governance, including mechanisms to ensure accountability for GME funding.

TABLE 3-9 Relative Financial Impacts of Program Characteristics of Training Programs in Internal Medicine, Cardiology, Family Medicine, Dermatology, General Surgery, Urology, and Radiation Oncology

Program Characteristic	Relative Financial Impact by Specialty						
	Internal Medicine	Cardiology	Family Medicine	Dermatology	General Surgery	Urology	Radiation Oncology
Residents provide on-call services that benefit both the hospital and attending physicians							
Residents teach more junior residents and medical students							
Some specialty programs have a larger cost impact on inpatient costs than others after controlling for hospital-level teaching effect				NA			NA
Resident training increases the cost of ambulatory care							

NOTE: Program characteristics that are likely to increase costs per resident are shown with up arrows; those that are likely to reduce costs are shown with down arrows. The relative magnitude of the direction is reflected in the shading. If the impact across programs is **in the same direction**, the **most affected** specialty program is shown with **black arrows**, the **least affected** specialty program is shown with **white arrows**, and those that fall **in between** are shown with **grey arrows**. If the impact is a **cost** for one or more programs and a **benefit** for the remaining programs, the shading of the arrow depicts the magnitude of the direction so that the black arrows denote a greater impact than the unshaded arrows. NA = not applicable.

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TABLE 3-10 Unintended Consequences of Current Medicare GME Payment Methods

Features of Current Medicare GME Payment Methods	Unintended Consequences
Separate funding streams that flow directly to teaching hospitals	• Funds that are intended for GME are essentially fungible; hospitals have fiduciary control over the use of GME funds. As a consequence: — Physician training in community-based settings—where most people seek care—is discouraged; — The specialty mix of available training slots is driven by the workforce needs and financial priorities of individual teaching hospitals rather than local, regional, or national workforce priorities; and — There is no financial incentive to improve the quality or efficiency of physician training.
Payments directly linked with Medicare patient volume	• Children's hospitals and other training institutions with relatively small Medicare caseloads receive minimal support. • Specialties with a non-clinical, population-based focus receive minimal support (e.g., public health and general preventive medicine). • Creates a disincentive to providing services outside the hospital or to finding alternative non-hospital interventions.
IME adjustment to DRG rates	• Adjustment inhibits the development and financial stability of training programs sponsored by community-based, ambulatory care settings. • Adjustment results in potentially significant overpayment to teaching hospitals.
DGME PRA across all specialties	• Substantial variation in PRAs reflect historical costs that no longer are relevant to current health care delivery system. • Other than weighting subspecialties, specialties or subspecialties in short supply are funded at the same level as specialties with excess supply. • Specialties that generate net revenues or boost productivity receive the same support as specialties that might require financial support.
Cap on Medicare-funded slots based on training programs and local health care delivery organization in 1996	• Cap contributes to a substantial geographic imbalance of both GME payments and training slots, favoring Northeastern states in particular, despite considerable movement of the U.S. population growth toward other regions of the country.

NOTE: DGME = direct graduate medical education; DRG = diagnosis-related group; IME = indirect medical education; PRA = per-resident amount.

GME monies directly to teaching hospitals in two independent funding streams (DGME and IME). Both funding streams are linked with hospitals' volume of Medicare inpatients. The hospitals have fiduciary control over the use of the funds. By giving the funds directly to teaching hospitals, the payment system discourages physician training in the clinical settings outside the hospital where most people seek care. Primary care residency programs are at a distinct disadvantage because of their emphasis on training in ambulatory care settings. Hospitals' control over the allocation of GME funds may also encourage the overproduction of specialists in disciplines that generate financial benefits for an individual institution rather than for the health care system overall.

The direct linkage of payments with Medicare patient volume also systematically disadvantages children's hospitals, safety net hospitals, and other training sites that care for non-elderly patients. Non-clinical, population-based specialties, such as public health and preventive medicine, are similarly affected. The HRSA CHGME program directs some funding to children's hospitals, but the funding is unpredictable because it is subject to the annual appropriations process. This undermines the capacity of the affected training programs to plan beyond the fiscal year. Teaching Health Centers also have time-limited federal support despite their potential for expanding the nation's capacity to train physicians in ambulatory care. Funding for THCs is scheduled to expire at the end of FY 2015.

The cap on Medicare-supported training slots is also problematic—not because it limits Medicare GME funding in the aggregate but because the slots that receive financial support are frozen where they existed almost two decades ago. This perpetuates inequities in the geographic distribution of training slots and ignores changes in the geography and demography of the U.S. population.

Finally, as many observers have noted, the absence of accountability in Medicare GME funding is a serious concern. By guaranteeing an automatic add-on to Medicare inpatient rates through the IME adjustment, the system lacks any incentive for quality or efficiency. Complete and comparable data on the use or outcomes of GME funds are not available. The DGME cost data that CMS collects have limited use because they are not complete, sufficiently detailed, standardized, or audited. Importantly, the financial benefits of GME for hospitals are rarely acknowledged when the costs of GME are examined, and the direction and magnitude of net financial impact are not known.

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4

Governance

Abstract: *This chapter examines the governance of graduate medical education (GME). There is no overarching system that oversees public GME funding in the interests of the nation's health or health care workforce needs. Federal GME funding is guaranteed except for a requirement that residency programs be accredited to receive federal support. GME accreditation is essential to ensuring that GME programs meet professional standards and produce physicians that are ready to enter practice with required knowledge, experience, and skills. However, antitrust and fair trade prohibitions preclude accreditors from addressing broader national objectives such as the makeup of the physician workforce, the geographic distribution of GME resources, or other priority concerns. Under the status quo, program outcomes are neither measured nor reported. As a result, many of the most fundamental questions about the effectiveness of the Medicare GME program are currently unanswerable. These include questions regarding the financial impact of residency training programs on teaching hospitals as well as the specialties and other important characteristics of trainees that are funded by Medicare. Several critical steps are needed to ensure appropriate governance of the public's investment in GME. The Medicare GME program should have a transparent, simple, and logical organizational infrastructure for program oversight and strategic policy development and implementation; methods to establish program goals consistent with the needs of the public that is financing the GME system; performance measures to*

monitor program outcomes with respect to those goals; and easily understood reporting to the public and other stakeholders.

Common notions of good governance are based on the expectation that public programs have the capacity to ensure responsible stewardship of public funds, to provide appropriate program oversight, and to achieve defined program outcomes. Good governance also requires transparency—public access to information—to promote accountability. Assessing these principles in the context of graduate medical education (GME) is challenging. The governance of GME is perhaps best described as an intricate puzzle of interlocking, overlapping, and sometimes missing pieces. No one entity oversees the GME system—particularly with respect to the use of public monies—and comprehensive information on the standards and processes that GME governance comprises is not available. Other than a requirement that residency programs be accredited by the Accreditation for Graduate Medical Education (ACGME), the American Osteopathic Association (AOA), the Commission on Dental Accreditation, or the Council on Podiatric Education to receive federal funding, there are few statutory requirements to guide Centers for Medicare & Medicaid Services (CMS) stewardship of GME funds (MedPAC, 2010). The financing and governance of GME are essentially disconnected.

This chapter examines the current landscape of GME governance, focusing on oversight of Medicare's funding of GME because it accounts for more than 90 percent of federal GME support. The chapter begins by defining accountability and describing the extent to which common accountability mechanisms are used by Medicare or other federal GME programs (see Table 4-1). It then describes selected federal entities with the potential to inform GME policy and the accreditation organizations that set and maintain the educational standards of GME programs. The chapter concludes with discussions of the potential use of performance-based metrics in Medicare GME financing and other opportunities for improving the governance of the public's investment in GME.

WHAT IS ACCOUNTABILITY?

Accountability is the acknowledgment and assumption of responsibility. It requires several basic elements: clarity of purpose, a responsible entity to provide program oversight, an obligation to be both transparent and answerable for results, and performance indicators to assess achievement of goals. Table 4-1 describes common mechanisms for facilitating accountability and their use in the federal GME funding programs. Except for accreditation and certification, most means of facilitating accountability,

TABLE 4-1 The Use of Accountability Mechanisms in Federal Graduate Medical Education (GME) Programs

Mechanism	Purpose	Current Use
Accreditation	To evaluate, review, and certify training programs and training institutions to ensure that they meet designated standards	Accreditation by ACGME or the AOA COPTI is required by the Medicare, Medicaid, Children's Hospital GME (CHGME), and Teaching Health Centers (THCs) programs.
Board certification	To ensure the public that certified specialists have the knowledge and skills required to provide high-quality care in a given specialty	Board certification of graduates of GME programs is controlled by ABMS and AOA, but has no direct connection to accountability for federal GME support.
Financial Oversight	To ensure stewardship of public funds	No direct oversight of Medicare or Medicaid GME funding by CMS; CHGME and THCs are administered by the HRSA Bureau of Health Professions.
Licensure	To ensure competence to practice medicine	All states require physicians to complete at least one year of GME training to be eligible for a license.
Performance measurement	To assess program performance and to inform future program improvements	Not required by Medicare, Medicaid, or CHGME; THCs are "encouraged" to track some outcomes.
Public participation	To give voice to the public interest	Limited; some public representation on the governing boards of accrediting agencies.
Public reporting	To facilitate transparency and inform the public	Not required by CMS for DGME and IME funding; children's hospitals that receive CHGME funding and THC awardees must report a variety of program details. Congress recently mandated that HRSA submit a report on CHGME. The Council on Graduate Medical Education publishes occasional reports (including policy recommendations) on various GME-related issues.

NOTES: ABMS = American Board of Medical Specialties; ACGME = Accreditation Council for Graduate Medical Education; AOA = American Osteopathic Association; CMS = Centers for Medicare & Medicaid Services; COPTI = Council on Osteopathic Postgraduate Training Institutions; DGME = direct graduate medical education; HRSA = Health Resources and Services Administration; IME = indirect graduate medical education.

SOURCES: ACGME, 2011b, 2013; AOA, 2013a.

such as an infrastructure for program oversight, performance metrics, and public reporting and participation, are absent.

What Is the Purpose of GME Funding?

Program accountability cannot be ensured without a shared understanding of the program's purpose and outcome expectations. But what is the purpose of GME funding? The legislative record regarding the original intent of Medicare GME funding is somewhat ambiguous. It is unclear, for example, whether the original intent for the program went beyond physician training to include other health professionals. The intended duration of Medicare GME funding was also uncertain. When Congress established the Medicare program in 1965, reports from the U.S. Senate and U.S. House of Representatives observed only that[1]:

> Many hospitals engage in substantial educational activities, including the training of medical students, internship and residency programs, the training of nurses, and the training of various paramedical personnel. Educational activities enhance the quality of care in an institution, and it is intended, until the community undertakes to bear such education costs in some other way, that a part of the net cost of such activities (including stipends of trainees, as well as compensation of teachers and other costs) should be borne to an appropriate extent by the hospital insurance program.

Later changes to the Medicare statute, described in the previous chapter, introduced additional rationale for Medicare GME payments (Nguyen and Sheingold, 2011). When the indirect medical education (IME) payment mechanism was created in 1983, for example, the stated intent was to account for costs outside the hospital's control (Wynn et al., 2013). House and Senate committee reports noted that[2]:

> This adjustment is provided in light of doubts . . . about the ability of the DRG case classification system to account fully for factors such as severity of illness of patients requiring the specialized services and treatment programs provided by teaching institutions and the additional costs associated with the teaching of residents. . . .The adjustment for indirect medical education costs is only a proxy to account for a number of factors which may legitimately increase costs in teaching hospitals.

The context for Medicare's role in financing GME is far different today

[1] 1965 Social Security Act (Senate Report No. 404, Pt. 1 89th Congress, 1st Sess. 36 [1965]; H.R. No. 213, 89th Cong., 1st Sess. 32 [1965]).

[2] House Ways and Means Committee Report, No. 98-25, March 4, 1983, and Senate Finance Committee Report, No. 98-23, March 11, 1983.

and will likely continue to evolve. The original rationale was formulated in an era when Medicare payments to hospitals were based on reasonable costs; fee-for-service reimbursement was the dominant payment method; health care services were concentrated in hospital settings; and the prospects of a substantial expansion in health insurance coverage were dim. In the more than 20 years since the IME adjustment to diagnosis-related group (DRG) payment rates was implemented, the DRG system has been refined to better reflect severity of illness, hospitals have received payments for disproportionate shares of uncompensated care, and the Patient Protection and Affordable Care Act (ACA) has significantly expanded health insurance coverage.

Thus, coming to consensus on the purpose of Medicare GME funding—today and in the future—was a central focus of the committee's early discussions. As Chapter 1 notes, the committee agreed that Medicare GME funding should be explicitly purposed to encourage production of a physician workforce better prepared to work in, to help lead, and to continually improve an evolving health care delivery system that can provide better individual care, better population health, and lower cost. Many researchers, policy makers, and stakeholders have articulated similar objectives for physician training (ACP, 2011; AHA, 2012; Boult et al., 2010; COGME, 2000, 2007b, 2010, 2013; Fuchs, 2012; Ludmerer, 2012; Ludmerer and Johns, 2005; MedPAC, 2009, 2010; Reddy et al., 2013; Salsberg, 2009; Skochelak, 2010; Weinstein, 2011).

Who Is Accountable for GME Funding?

There is no overarching system to guide GME funding in the interests of the nation's health or local or regional health care workforce needs. CMS simply acts as a passive conduit for GME funds distribution to teaching hospitals. As the previous chapter described, GME funding is formula driven and essentially guaranteed except for the requirement that residencies be accredited to receive federal support.[3] How the funds are used is at the discretion of the hospitals. Program outcomes are neither measured nor reported. To the extent there is accountability, it is the accountability of the teaching institution to its own priorities and to accreditors, not to the public that provides the funds.

Program accreditation and board certification are essential to ensuring that GME programs meet professional standards and produce physicians that are ready to enter practice with required knowledge, experience, and skills. However, accreditation and board certification cannot address broader national objectives regarding the makeup of the physician work-

[3] See Chapter 3 for a description of GME financing.

force, the geographic distribution of GME resources, or other priority concerns. State and federal antitrust and fair trade statutes prohibit accreditation organizations from directly engaging in issues related to the number and types of subspecialty programs or the size of residency programs (other than for reasons related to educational capacity) (Nasca, 2012).

Although not directly accountable for GME funding, several federal advisory groups and research centers, described below, are engaged in relevant activities:

- **Council on Graduate Medical Education (COGME):** A federal advisory committee, established in 1986 to provide national leadership on GME issues and to supply relevant advice to the Secretary of the Department of Health and Human Services (HHS); the Senate Committee on Health, Education, Labor, and Pensions; and the House of Representatives Committee on Energy and Commerce (HRSA, 2012). COGME's capacity to provide substantive program oversight and independent evaluation is limited by several factors. In fiscal year (FY) 2012, COGME's appropriations totaled about $318,000 for both operations (travel and compensation for 17 Council members) and staff (1.3 FTEs) (HRSA, 2012). COGME's mandated composition emphasizes stakeholder representation over relevant technical expertise. By law, members must include representatives of practicing physicians, physician organizations, international medical graduates, medical student and house staff associations, schools of medicine, public and private teaching hospitals, health insurers, business, and labor. Designees of the HHS Assistant Secretary for Health, CMS, and the Department of Veterans Affairs are also mandated members. There is no requirement for COGME members to have skills in research methods, health care finance, workforce analysis, or health or labor economics, or to represent the public interest. The Council's influence is further limited by its organizational placement. It is located not in the federal agency that distributes Medicare or Medicaid GME funding, but in the Bureau of Health Professions within the Health Resources and Services Administration (HRSA), an HHS agency without a direct link to CMS and whose primary mission concerns underserved populations. COGME's role is advisory; it lacks the regulatory authority to effect change. Although COGME has produced numerous reports, none have affected federal GME policy (COGME, 2000, 2004, 2005a,b, 2007a,b, 2010b, 2013).
- **Medicare Payment Advisory Commission (MedPAC):** MedPAC is an independent congressional agency that has provided highly regarded, but only occasional, policy analysis and advice regarding

Medicare GME to Congress (MedPAC, 1999, 2001, 2003, 2009, 2010). In contrast to COGME, MedPAC has deep analytic expertise and knowledge of Medicare as well as considerable resources. Its staff includes approximately 25 full-time researchers with skills in economics, health policy, public health, and medicine (MedPAC, 2013). However, because Medicare GME funding accounts for less than 2 percent of total Medicare spending, it is not a principal MedPAC focus. The 17-member Commission is charged with providing advice to Congress on all issues affecting Medicare, including payment methodologies and beneficiaries' access to and quality of care (MedPAC, 2013). The Commissioners, who have diverse backgrounds in the financing and delivery of health care services, are appointed by the Comptroller General of the Government Accountability Office (GAO).

- **CMS Center for Medicare & Medicaid Innovation (CMMI):** CMMI was established under the ACA[4] to develop, test, and accelerate the adoption of new payment and service delivery models (CMMI, 2012). To date, CMMI activities have not focused on GME, but the Center may have the capacity to pilot innovative GME payment methods to help identify effective incentives for aligning physician training with regional or national health care workforce priorities. CMMI began operations in FY 2011 with $10 billion in direct funding through FY 2019. Its activities focus on the models and initiatives identified in Section 3021 of the ACA. These include accountable care, bundled payments for care improvement, primary care transformation, the Medicaid and Children's Health Insurance Program (CHIP) population, the dually eligible Medicaid-Medicare population, new payment and service delivery models, and initiatives to speed the adoption of best practices. CMMI also supports other demonstration and research sponsored by CMS.
- **National Center for Health Workforce Analysis (HRSA Bureau of Health Professions):** The Center is charged with estimating the supply and demand for all types of health workers (HRSA, 2013b; National Center for Health Workforce Analysis, 2013). It is also responsible for methods development and related research. Although the Center's work has the potential to inform GME policy, it does not have a direct link to CMS.

[4] Section 3021 of the Affordable Care Act; 42 U.S.C. 1315 (Section 1115A of the Social Security Act).

- **National Health Care Workforce Commission:** Also created under the ACA,[5] the Commission was established to address the implications of federal policies for the health care workforce—including GME. It has never received appropriations and is inactive.

Transparency

One of the most striking messages from the previous chapters is how little is known about the management and effectiveness of the public's more than $15 billion annual investment in GME. Teaching hospitals are only required to report the data elements that Medicare uses to calculate the GME payment amounts (see Table 4-2) (CMS, 2013). Medicaid GME data are neither collected nor reported (Henderson, 2013; Herz and Tilson, 2009). The available GME data from CMS and the teaching hospitals have limited use for program oversight, workforce analysis, or policy making.

As a result, many of the most fundamental questions about the outcomes and effectiveness of the Medicare GME program are currently unanswerable. These include, for example:

- What is the financial impact of residency training programs on teaching hospitals and other GME training sites that sponsor them?
  - What are the differences in training costs by specialty, type of training site, geographic location, sponsor, program size, or patient population?
  - What are the institutional revenues or savings generated by residents?
- Do these programs produce competent doctors?
  - Are the physicians trained to provide coordinated care across health care settings?
  - Are the physicians trained in the skills required for patient safety?
- How much does each teaching institution receive in Medicare GME funding each year? What proportion of these payments is used for educational purposes?
- Who are the trainees supported by GME funding? What are their specialties and racial and ethnic, socioeconomic, and other relevant characteristics?
- Of those trainees whose residencies are subsidized by the public, how many go on to practice in underserved specialties, to locate in underserved areas, or to accept Medicare and Medicaid patients?

[5] Public Law 111-14, Subtitle B—Innovations in the Health Care Workforce.

TABLE 4-2 Current Federal Reporting Requirements for GME Programs

Program/Agency	Reported Information	Reporting Responsibility	Report Recipient
Medicare GME/CMS	Medicare statute requires that GME sponsors report the data elements needed to calculate IME and DGME payment, including: • Annual direct GME costs • Number of FTE trainees in their initial residency period • Amount of time residents spend on rotations at various locations • Intern and resident to bed ratio • Medicare bed ratio	Teaching hospitals and other sponsoring organizations	CMS
Medicaid GME/CMS	No reporting requirements	None	None
Children's Hospitals GME (CHGME)/ HRSA	CHGME 2006 reauthorization mandated that program participants report: • Types and number of training programs by specialty and subspecialty • Types of training related to the needs of underserved children • First practice location of graduates • Curricular focus of training programs • Other program details	Participating children's hospitals	HRSA
	HRSA summarizes the individual reports and recommends program improvements.	HRSA	Congress
Teaching Health Centers (THCs)/ HRSA	THC authorizing legislation mandated that program awardees report the number of: • Accredited training programs • Approved part-time or full-time equivalent training positions • Primary care physicians and dentists who completed training in the THC • Program graduates who currently care for vulnerable populations • Other information "deemed appropriate," e.g., residents' demographics, rural background, and medical education	Participating THCs	HRSA
	In addition: • Awardees are "encouraged to track" graduates' practice types and locations for 5 years after completing training • Total compensation for funding recipients' and subrecipients' five most highly paid executives		
VHA GME/Veterans Affairs	No reporting requirements; however, the VHA Office of Academic Affiliations has full access to all residency program data from VHA teaching institutions.	Not applicable	NA

NOTE: CMS = Centers for Medicare & Medicaid Services; DGME = direct graduate medical education; FTE = full-time equivalent; GME = graduate medical education; HRSA = Health Resources and Services Administration; IME = indirect medical education.

SOURCES: CMS, 2012a; HRSA, 2011, 2013c.

- What proportion of trainees' time is spent in inpatient care, hospital outpatient, and community-based settings?
    - Are the program's trainees trained in a variety of clinical settings where physicians in that specialty provide care?

Two Noteworthy Exceptions

The VHA Office of Academic Affiliations tracks its facilities' GME costs and has access to a full range of information on its residency programs. As a result, researchers have been able to analyze a variety of important questions, such as the impact of training programs on staff physicians' productivity, specialty differences in the intensity of resident supervision, and residents' increasing independence during training (Byrne et al., 2010; Coleman et al., 2003; Kashner et al., 2010).

The HRSA Children's Hospitals GME (CHGME) and Teaching Health Center (THC) programs have specific reporting requirements that provide the potential for assessments of their effectiveness. The authorizing legislation[6] for these programs mandates that HRSA produce routine reports on a range of funds recipients' characteristics and outcomes. The first CHGME report was published in 2013 (HRSA, 2013c). HRSA has funded a comprehensive 5-year THC evaluation plan with periodic reports (HRSA, 2013a).

GME ACCREDITATION AND CERTIFICATION

Accreditation and certification are forms of professional self-regulation. In GME, the professions establish their own standards and processes to ensure that the curriculums and conduct of residency programs can be expected to produce competent physicians. Along the continuum of physician education, there are multiple accrediting entities that oversee physician training programs and institutions, and dozens of certifying and licensing organizations that affirm individuals' readiness to practice (see Figure 4-1). In addition to ACGME and the Council on Osteopathic Postgraduate Training (COPT), numerous specialty societies and other organizations provide program accreditation (especially for subspecialty education). Approximately 200 organizations (often physician specialty societies) provide physician certification in various subspecialty areas of practice (ABMS, 2013a). There are 70 allopathic and 18 state osteopathic agencies that control licensure to practice.

[6] The CHGME reporting requirements were introduced in its 2006 reauthorization. When this report was drafted, future CHGME funding was uncertain.

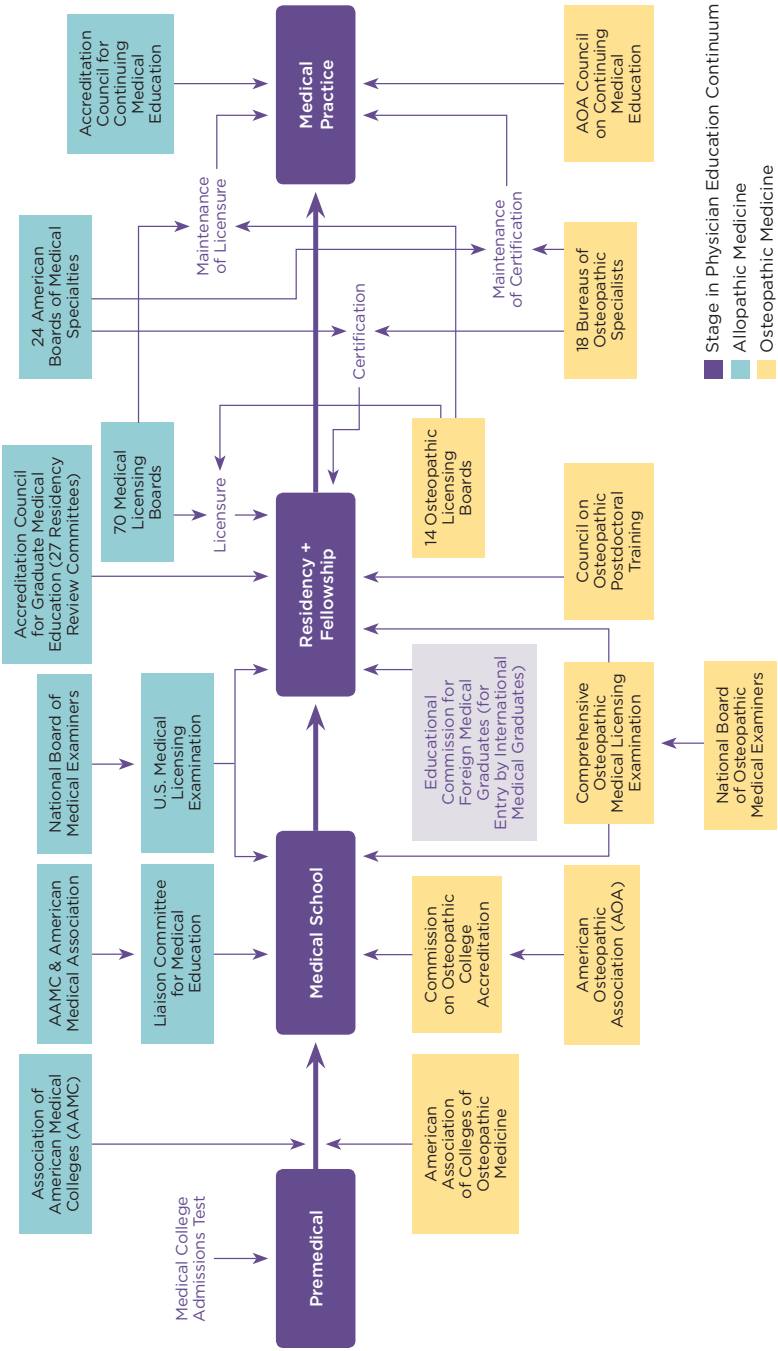

FIGURE 4-1 Program accreditation and physician certification and licensure.

Because of the dearth of federal oversight, accountability for Medicare GME funding has essentially been delegated—de facto—to the private organizations that accredit or certify GME training institutions and residency programs. As noted earlier, all federal GME funding—Medicare, Medicaid, CHGME, and THCs—is contingent on accreditation (Social Security Administration, 2014).

Graduates of GME programs become eligible for *board certification* through specialty and subspecialty boards. Although it is voluntary, most physicians pursue certification. Board certification—which does not qualify programs for federal GME funding—is a designation conferred by one or more of the specialty boards and is intended to ensure the public that certified physicians have the knowledge, experience, and skills that the relevant board deems necessary for delivering high-quality care (ABMS, 2013a,b; Shaw et al., 2009). Certification is not required to practice medicine in any state, because medical licenses are not specialty specific (Nora, 2013). It is, however, increasingly required by hospitals and other health care organizations as a condition of employment or practice privileges and by health insurers as a condition of physician enrollment.

As Table 4-3 indicates, the organizations that govern GME program accreditation and individual physician certification are private, non-profit entities funded largely by membership dues and/or application and examination fees. The specialty boards and other organizations conferring certification are typically led by physicians, whereas the accreditation organizations are led by a broader range of stakeholders, sometimes including representatives of the public.

The dual tracks of allopathic and osteopathic medicine present a particular challenge to understanding the accreditation and certification processes. As Figure 4-1 and Table 4-4 illustrate, there are parallel allopathic and osteopathic standard-setting organizations for GME training programs and institutions and also specialty certification. In March 2014, the two organizations announced an agreement to transition to a single accreditation system for GME by 2020 (Nasca et al., 2014b). The committee applauds this initiative and other ACGME and AOA efforts to better pre-

TABLE 4-3 Private Organizations That Have a Governance Role in GME

Organization	Role in GME	Funding and Leadership
Accreditation Council for Graduate Medical Education (ACGME)	Sets GME institutional accreditation standards for institutions and programs; oversees the accreditation process through its 28 Residency Review Committees (RRCs) and Institutional Review Committee	Private, non-profit funded primarily by program fees. The Board of Directors is nominated by ABMS, AHA, AMA, AAMC, and CMSS and includes public members, at-large members, residents, and non-voting VA and HHS representatives.

TABLE 4-3 Continued

Organization	Role in GME	Funding and Leadership
American Board of Medical Specialties (ABMS)	To support the specialty certification activities of its member boards	Private, non-profit funded by member dues and licensing fees. The Board of Directors includes representatives of medical specialty boards; associate board members represent AAMC, ACCME, ACGME, AHA, AMA, CMSS, ECFMG, FSMB, and NBME.
Bureau of Osteopathic Specialists	Oversees specialty certification, including standards setting and implementation	Funded by AOA. The Bureau includes one representative from each AOA-approved certifying board as well as a chair, vice chair, and public member appointed by the AOA president.
Council on Osteopathic Postdoctoral Training	Determines GME accreditation standards and oversees the accreditation process	Funded by AOA. Council members include representatives from OPTI, AACOM, AMOPS, BOH, and BOME; representatives from specialty practice affiliates; an AOA member-at-large; and an intern/resident.
Council on Osteopathic Postdoctoral Training Institutions	Accredits osteopathic postdoctoral (GME) training institutions and consortiums	Funded by AOA. Chair is appointed by the AOA President. Members include representatives of AACOM, AODME, and AOA BOH; OPTI administrators and educators; and a student and intern/resident.
Educational Commission for Foreign Medical Graduates	Certifies the eligibility of international medical graduates for U.S. training programs	Private, non-profit funded by application and licensing/exam fees. Board of Trustees includes organizational members (ABMS, AMA, AAMC, AHME, FSMB, NMA), Trustees-at-Large, and ECFMG president.
Individual medical specialty boards	Set standards for specialty/subspecialty board certification; develop and administer certifying exams	Private, non-profit organizations funded by member dues.
RRCs	Have delegated authority from the ACGME to set standards for and accredit residency training programs	RRC members are nominated by the AMA Council on Medical Education, ABMS, and the Council of Medical Specialty Societies.

NOTES: AACOM = American Association of Colleges of Osteopathic Medicine; AAMC = Association of American Medical Colleges; ACCME = Accreditation Council for Continuing Medical Education; AHA = American Hospital Association; AHME = Association for Hospital Medical Education; AMA = American Medical Association; AMOPS = Association of Military Osteopathic Physicians and Surgeons; AODME = Association of Osteopathic Directors and Medical Educators; BOH = Bureau of Hospitals; BOME = Bureau of Osteopathic Medical Educators; CMSS = Council of Medical Specialty Societies; ECFMG = Educational Commission for Foreign Medical Graduates; FSMB = Federation of State Medical Boards; GME = graduate medical education; NBME = National Board of Medical Examiners; NMA = National Medical Association; OPTI = Osteopathic Postdoctoral Training Institution.

SOURCES: ACGME, 2011b, 2013; AOA, 2008, 2012, 2013a,c.

TABLE 4-4 GME Governance: Standard Setting, Accreditation, Certification, and Licensing Organizations

Functions	ACGME	BOE & AOA Board of Trustees	ABMS	Other Medical Specialty Boards	Other Osteopathic Specialty Boards	RRCs	PTRC	Osteopathic Specialty Colleges	COPTI	COPT	ECFMG	NBME	BOS	NBOME
Sets standards:														
GME training programs	✓	✓	✓	✓	✓	✓	✓	✓		✓			✓	
GME training institutions	✓	✓				✓	✓	✓		✓				
Specialty certification			✓	✓	✓								✓	
GME Osteopathic Consortia		✓							✓					
Accredits:														
GME training programs	✓	✓					✓			✓				
GME training institutions									✓					
GME Osteopathic Consortia									✓					
Certifies:														
IMG trainees' eligibility for GME											✓			
Specialty board certification of individual trainees			✓	✓	✓								✓	
Physician licensing												✓		✓

NOTES: ABMS = American Board of Medical Specialties; ACGME = Accreditation Council for GME; AOA = American Osteopathic Association; BOE = Bureau of Osteopathic Education; BOS = Bureau of Osteopathic Specialists; COPT = Council on Postdoctoral Training; COPTI = Council on Osteopathic Postdoctoral Training Institutions; ECFMG = Educational Commission for Foreign Medical Graduates; GME = graduate medical education; NBME = National Board of Medical Examiners; NBOME = National Board of Osteopathic Medical Examiners; PTRC = Osteopathic Program & Training Review Council; RRC = Residency Review Committee.

pare physicians for contemporary health care delivery (AOA, 2013b; Buser and Hahn, 2013; Nasca et al., 2010). Both organizations are currently modifying their processes in order to cultivate continuous improvement in GME (Nasca et al., 2012; Shannon et al., 2013).

New Directions in Accreditation: Focusing on Competency and Outcomes

In 1998, the ACGME initiated the "Outcome Project," the beginning of an important shift toward competency-based and outcomes-oriented GME accreditation (Swing et al., 2007). The following year, ACGME introduced six domains of clinical competency—patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and systems-based practice—to frame future GME curriculum development and program evaluation (Nasca et al., 2010).

In 2009, ACGME began The Next Accreditation System (NAS), a fundamental restructuring of the accreditation process with three primary objectives: to improve the ability of the system to prepare physicians for 21st-century practice; to accelerate the system's transition from a focus on process to a system based on educational outcomes; and to lessen the administrative burden of complying with accreditation standards (Nasca et al., 2012). Every ACGME-accredited residency program will be required to demonstrate that its trainees achieve competencies in the six domains. Phased implementation of NAS began in 2013; July 2014 is the target date for full implementation by all specialties (Nasca et al.., 2012, 2014a).

A key component of the NAS is its emphasis on training and learning sites through the Clinical Learning Environment Review (CLER). The initial report on the results of more than 100 CLER visits to teaching hospitals focused on residents' involvement in patient safety and clinical quality improvement activities (Nasca et al., 2014b). These early visits found that the environments for the clinical training of residents often lacked the desired opportunities for trainee learning (Weiss et al., 2013). The site visitors will return to institutions on a regular basis, pointing out deficiencies and outlining requirements for improvement.

Performance Metrics

Performance metrics that are tied to financial incentives are increasingly used by CMS, private payers, and others to improve the delivery and outcomes of health care (Berenson et al., 2013; GAO, 2012; Kaiser Health News, 2012; National Quality Forum, 2013; RTI International and Telligen, 2012). The measures are most commonly used in public reporting and provider incentive programs. CMS now employs more than 100 performance measures in Medicare (RTI International and Telligen, 2012) and routinely issues reports that compare the performance of competing health plans, home health agencies, hospitals, and nursing homes (CMS, 2012b). Medicare also links the measures with financial incentives or penalties in its pay-for-performance programs.

Mirroring ACGME's ongoing transition to outcomes-based accreditation, MedPAC, COGME, the American College of Physicians, and others have called on CMS to introduce GME performance metrics and outcomes-based GME payment in the Medicare program (ACP, 2011; Baron, 2013; COGME, 2007; Goodman and Robertson, 2013; Johns, 2010; MedPAC, 2009, 2010; Swensen et al., 2010; Weinstein, 2011). Chapter 2 described the evidence that newly trained physicians are not adequately prepared for contemporary practice. GME payment should reward educational outcomes that are aligned with the standards of a high-performance health care system. The triple aim will not be achieved unless physicians are skilled in care coordination, efficient use of resources, quality improvement, cultural competence, and other essential areas.

In its 2010 review of the educational priorities in GME financing, MedPAC recommended that Medicare's GME payments be performance based and contingent on agreed-upon objectives for the GME system (without systematically advantaging or disadvantaging particular types of training institutions or programs) (Hackbarth and Boccuti, 2011; MedPAC, 2010). MedPAC urged the Secretary of HHS to establish an expert advisory body—including representatives of accrediting and certification organizations, residency training programs, health care organizations, health care purchasers and insurers, and patient and consumer groups—to recommend new measures for that purpose (Hackbarth and Boccuti, 2011).

Feasibility

Although there are no nationally agreed-upon GME performance measures, the feasibility of measuring some GME outcomes has been demonstrated in a number of recent studies. Chen et al. (2013), for example, used data from Medicare claims files, the American Medical Association (AMA) physician masterfile, and National Health Service Corps (NHSC) data to examine the career choices and practice locations of graduates from residencies in primary care, internal medicine, psychiatry, and general surgery. The Robert Graham Center for Policy Studies in Family Practice and Primary Care, an independent research center within the American Academy of Family Physicians, has developed an interactive online tool—the "GME outcomes mapper"—to enable users to examine selected outcomes for individual GME sponsoring organizations and primary teaching sites by state and nationwide (Graham Center, 2013).[7] The available outcomes are the number of residency graduates; percentage of residency graduates in primary care (including the percentage of internal medicine graduates who stay in

[7] Available at http://www.graham-center.org/online/graham/home/tools-resources/gme-mapper.html (accessed June 13, 2013).

primary care), general surgery, obstetrics/gynecology, and psychiatry; and the percentage practicing in rural areas. In a study focused on clinical outcomes, Asch and colleagues (2014) used maternal complications of delivery as a measure to assess the training of obstetricians.

What to Measure and Report to the Public

As noted earlier in the chapter, there are many basic, unanswered questions regarding outcomes of GME funding. MedPAC has recommended that the Secretary of HHS publish an annual report detailing Medicare payments to each hospital and each hospital's associated costs, the number of supported residents and other health professionals, and Medicare's share of the teaching costs (MedPAC, 2010). Others have suggested that public reports should include outcomes related to agreed-on GME objectives (Johns, 2010; Weinstein, 2011). Such outcomes could include key characteristics of the residents supported by Medicare funds (e.g., specialty and subspecialty, race/ethnicity, practice in underserved areas and with vulnerable populations, residents' time training in community-based settings).

CONCLUSION

The GME accreditation system is an essential foundation for the governance of GME. As the accreditation and certification processes transition to a competency-based and outcomes-oriented system, GME program standards will be increasingly in sync with the objectives of a high-performing health care system. In addition, the proposed unification of the ACGME and AOA GME standards has the potential to simplify accreditation and provide important efficiencies. However, antitrust regulations preclude accreditors from addressing broader, crucial system-wide objectives such as the competencies and makeup of the physician workforce or the geographic distribution of GME resources.

What Is Missing in GME Governance?

The critical missing piece in GME governance is the stewardship of the public's investment. The public has the right to expect that its investment will be used to produce the types of physicians that today's health care system requires. Under the status quo, there are no mechanisms or basic infrastructure to make this possible.

The Medicare GME program clearly needs an organizational infrastructure for strategic policy development and implementation and program oversight. At a minimum, it should have:

- *Robust resources with sufficient expert staff and the capacity to conduct or sponsor demonstrations of alternative payment methods*. MedPAC, for example, has an estimated $11.5 million budget, 17 commissioners, and about 25 professional staff members.[8] Its portfolio is far more extensive than GME; the Medicare GME entity could be smaller.
- *Regulatory authority to administer Medicare GME spending and oversee GME payment policies*—The governing entities should have the ability to collect administrative data and to direct changes in practices. This requires a close organizational linkage with the Medicare program.
- *Independence and objectivity with protections from conflicts of interest*—Members of the governing body should disclose potential conflicts of interest. Individuals with clear financial interests should be consulted.
- *A governing body selected with appropriate expertise* in physician education, accreditation and certification, health care workforce; health care finance and economics, education of health professionals other than physicians (including advanced practice nurses and physician assistants, research methods); cultural competence; underserved populations (both rural and urban); performance measurement and quality improvement.
- *A mechanism to solicit the input* of representatives of accrediting and certifying bodies, training programs, health care organizations, payers, and patient and consumer groups.

The committee reviewed a range of alternatives that might incorporate the above features. Pragmatic considerations—particularly the potential for actual implementation—were another consideration. The fate of the authorized but unfunded National Health Care Workforce Commission is particularly instructive. Although the significant gap in information on the makeup of the health care workforce has been noted for many years, Congress has not provided any appropriations for the Commission's operations. A private entity might have appealing features, but it would require a new source of funds (an unlikely prospect) and it could not direct the allocation of Medicare funds. The federal agencies that currently provide advice on GME policy are not situated to effect change. COGME is a small federal advisory committee to an HHS agency—the HRSA Bureau of Health Professions—without any regulatory authority over Medicare spending. MedPAC has deep analytic resources but, because it is a congressional

[8] MedPAC budget data provided via personal communication with Mark Miller, Executive Director, MedPAC, May 16, 2013.

agency, it cannot direct an executive branch agency's (i.e., CMS's) activities such as the distribution of Medicare funds. The likelihood of sufficient resources over a sustained period was another critical consideration. As Chapter 3 noted, GME-related programs that are subject to the appropriations cycle are often uncertain about future funding.

In conclusion, the current governance of GME financing is inadequate. The accreditation system demands high educational standards and it is making significant strides toward 21st-century health system objectives. But accreditation alone cannot ensure that the physician workforce meets the nation's needs. An accountable governance infrastructure should be created to assure the public that its annual multibillion-dollar investment in GME produces skilled physicians prepared to work in, to help lead, and to continually improve the health care system. There is no ideal organizational arrangement for establishing that infrastructure. Placing it within HHS ensures a close organizational linkage with the Medicare program and the potential to reward program outcomes.[9]

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[9] Chapter 5 further outlines the committee's recommendations for a GME policy infrastructure.

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5

Recommendations for the Reform of GME Financing and Governance

Abstract: *Throughout the nearly 50 years of federal support, the nation's graduate medical education (GME) system has been regarded as a model of physician training that produces high-quality clinicians. The capacity of the system has expanded, yet there is little evidence that the expansion is in areas where it is most needed, and there is growing concern that recent GME graduates lack some of the essential skills for 21st-century practice. Medicare alone distributes nearly $10 billion annually for the residency training of physicians, with minimal reporting requirements and no connection to outcomes. The committee's recommendations provide an initial roadmap for reforming the Medicare GME payment system and for building an infrastructure to drive strategic investment in the nation's physician workforce. Change cannot and should not occur precipitously. The committee recommends a 10-year transition from the status quo to full implementation of the recommendations, and then a reassessment of the need for continued Medicare GME funding. The rules governing the Medicare GME financing system are rigid and rooted in statute. The committee strongly urges Congress to amend Medicare law and regulation, as outlined in this chapter, to enable the beginning of the transition in this very important investment in the nation's future physician workforce.*

Since the creation of the Medicare and Medicaid programs, the public has provided tens of billions of dollars to fund graduate medical education

(GME) in teaching hospitals and other educational institutions that sponsor physician residency training. The scale of government support of this phase of physician education is unlike that given to any other profession in the United States. In 2012 alone, public tax dollars contributed more than $15 billion to support residency training. The Medicare and Medicaid programs provided more than 90 percent of the federal funding, an estimated $9.7 billion and $3.9 billion, respectively.

This chapter reviews the committee's assessment of current GME governance and financing, described in the previous chapters, and then presents five policy recommendations for their improvement (see Box 5-1). The focus is on the Medicare program because, as the dominant funding source, it has the most leverage to effect change. The committee does not recommend changes to the financing and governance of residency programs provided or sponsored by the Veterans Health Administration (VHA) or the Department of Defense. As Chapter 3 notes, although the VHA does not sponsor residency programs, VHA hospitals train a substantial portion of the nation's physicians through affiliation agreements with medical schools and other sponsoring organizations. VHA GME funding comes solely from the agency's annual appropriations. The VHA Office of Academic Affiliations tracks GME spending in VHA teaching hospitals and also has access to a full range of information on its residency programs.

OVERVIEW

The committee began its deliberations by considering several fundamental questions: Should the public continue to support GME? If yes, then why should Medicare, a health insurance program for older adults and certain disabled persons, be the conduit for the public's funding of an educational program? Would other GME financing mechanisms be more appropriate?

The Public's Role in Financing GME

Public financing of GME, particularly through Medicare, has been a secure and stable funding source for physicians' residency training for nearly 50 years. During that time, GME training positions have expanded in number and in the breadth of specialties; residents' working conditions have improved; substantially more women are in the training pool; the number of underrepresented minorities has increased (although greater representation is still needed); and residency training has evolved from an apprenticeship model with an emphasis on service to a curriculum-based educational experience tied to the achievement of defined competencies in specific areas.

BOX 5–1
Recommendations

RECOMMENDATION 1: Maintain Medicare graduate medical education (GME) support at the current aggregate amount (i.e., the total of indirect medical education and direct graduate medical education expenditures in an agreed-on base year, adjusted annually for inflation) while taking essential steps to modernize GME payment methods based on performance, to ensure program oversight and accountability, and to incentivize innovation in the content and financing of GME. The current Medicare GME payment system should be phased out.

RECOMMENDATION 2: Build a graduate medical education (GME) policy and financing infrastructure.

2a. Create a GME Policy Council in the Office of the Secretary of the U.S. Department of Health and Human Services. Council members should be appointed by the Secretary and provided with sufficient funding, staff, and technical resources to fulfill the responsibilities listed below.

- Development and oversight of a strategic plan for Medicare GME financing;
- Research and policy development regarding the sufficiency, geographic distribution, and specialty configuration of the physician workforce;
- Development of future federal policies concerning the distribution and use of Medicare GME funds;
- Convening, coordinating, and promoting collaboration between and among federal agencies and private accreditation and certification organizations; and
- Provision of annual progress reports to Congress and the Executive Branch on the state of GME.

2b. Establish a GME Center within the Centers for Medicare & Medicaid Services with the following responsibilities in accordance with and fully responsive to the ongoing guidance of the GME Policy Council:

- Management of the operational aspects of GME Medicare funding;
- Management of the GME Transformation Fund (see Recommendation 3), including solicitation and oversight of demonstrations; and
- Data collection and detailed reporting to ensure transparency in the distribution and use of Medicare GME funds.

RECOMMENDATION 3: Create one Medicare graduate medical education (GME) fund with two subsidiary funds.

3a. A *GME Operational Fund* to distribute ongoing support for residency training positions that are currently approved and funded.

3b. A *GME Transformation Fund* to finance initiatives to develop and evaluate innovative GME programs, to determine and validate appropriate GME performance measures, to pilot alternative GME payment methods, and to award new Medicare-funded GME training positions in priority disciplines and geographic areas.

BOX 5–1 *Continued*

RECOMMENDATION 4: Modernize Medicare graduate medical education (GME) payment methodology.

4a. Replace the separate indirect medical education and direct graduate medical education funding streams with one payment to organizations sponsoring GME programs, based on a national per-resident amount (PRA) (with a geographic adjustment).

4b. Set the PRA to equal the total value of the *GME Operational Fund* divided by the current number of full-time equivalent Medicare-funded training slots.

4c. Redirect the funding stream so that GME operational funds are distributed directly to GME sponsoring organizations.

4d. Implement performance-based payments using information from *Transformation Fund* pilots.

RECOMMENDATION 5: Medicaid graduate medical education (GME) funding should remain at the state's discretion. However, Congress should mandate the same level of transparency and accountability in Medicaid GME as it will require under the changes in Medicare GME herein proposed.

However, the statutes and regulations governing GME financing were developed at a time when hospitals were the central—if not exclusive—site for physician training. The health care context is dramatically different from that of five decades ago, and health care delivery continues to evolve rapidly. The imperative for an accelerated transition toward a high-value, high-performance health care system has been well articulated by previous Institute of Medicine (IOM) committees as well as many others (Bipartisan Policy Center Health Project, 2013; Commonwealth Fund, 2006; IOM, 2001, 2006a,b, 2008, 2012). A high-value health care system embraces the entire continuum of care, not just hospital care; relies on interprofessional teams, not just doctors; emphasizes primary rather than specialty care; and requires accountability to the public and payers, rather than relying on trust in the good intentions of professionals. Although hospitals and specialists remain essential, the burden of chronic disease, the need for greater emphasis on preventive care, and modern information technologies (to name but a few influences) shift attention to homes, communities, highly skilled clinicians who are not physicians, and integrated models of coordinated care—in ways that few in 1965 could have foreseen.

Several key considerations informed the committee's thinking regarding future public funding of GME. First, the committee agreed that its charge

was not to develop an idealized GME financing system from scratch—as if teaching hospitals had not been receiving GME dollars in a fairly consistent way for nearly 50 years. It might be a historical accident that Medicare evolved to be the primary public funder of GME. Nevertheless, withdrawing Medicare funding altogether risks serious unintended consequences.

Chapters 3 and 4 described the lack of comprehensive and standardized reporting of GME outcomes related to financing. Very limited information is currently available on the use of public dollars distributed for GME. Despite assertions to the contrary, it is not possible to determine if the "production" of our nation's physicians is actually dependent on federal monies. Moreover, little evidence suggests that the current terms of GME financing encourage the production of the types of physicians that the nation's health care system requires. In fact, as the previous chapters make clear, Medicare GME rules discourage efforts to train physicians in the clinical settings—outside the hospital—where most people seek care. The historic cost-based system perpetuates inequities in funding, and the institutional caps on funding likely represent a disincentive to expansion of GME in some cases where it may be needed. At the same time, there are no funding incentives in Medicare that encourage innovation or desired GME outcomes.

The committee considered a range of potential GME funding sources, including maintaining or modifying current Medicare support, an all-payer approach that would require both private and public payers to contribute to GME financing, a dedicated federal GME program independent of the Medicare and Medicaid programs, a significant expansion in Title VII health professions funding directed to physician education, and even the possibility of requiring residents to pay tuition.

It quickly became clear that funding GME through an entitlement program—such as Medicare—provides a level of stability that enables sponsoring institutions to make the commitments to the trainees, faculty, and facilities that GME needs. Stable funding is also essential to ensuring a meaningful role for residents in patient care delivery, which is the foundation of our educational model. Relying on a federal program that depends on discretionary appropriations would introduce significant risk and considerable uncertainty for training programs. Federal agencies struggle to hold onto the funding needed to achieve their objectives. The tenuous funding of the Health Resources and Services Administration's (HRSA's) Children's Hospitals GME (CHGME) program is a case in point: Its reauthorization was in question throughout the course of this study (Wong et al., 2013).

Finally, the health care sector consumes more than 17 percent of the gross domestic product, 26 percent of which is federal funding (CMS, 2012). Advocating for increased federal GME funding would be irresponsible without evidence that the public's current level of investment is helping to produce the workforce needed in the 21st century. At the same time,

Medicare GME funding should not be reduced from current levels *if* it can be leveraged for greater public benefit. Both the public's health and the economy have an important stake in the effectiveness and availability of the physician workforce and the health care workforce overall. A significant cut to GME funding would squander the very leverage required to effect much-needed change. This is the time for all those engaged in the GME system to work together to produce the physician workforce that the nation needs. As a result of these considerations, the committee thus decided to focus its recommendations on Medicare GME payment reforms (and their related governance).

The Outcomes of Current GME Governance and Financing Arrangements

As Chapter 1 describes, the committee agreed on a set of goals for future federal financing of GME. These six goals, presented in Box 5-2, served as the committee's framework for assessing the current GME system. The following discussion uses this framework to recap the conclusions of the previous chapters and to discuss their implications for the committee's policy recommendations presented in greater detail later in the chapter.

BOX 5–2
IOM Committee's Goals for Developing Graduate Medical Education (GME) Policy Recommendations

1. Encourage production of a physician workforce better prepared to work in, help lead, and continually improve an evolving health care delivery system that can provide better individual care, better population health, and lower cost.
2. Encourage innovation in the structures, locations, and designs of GME programs to better achieve Goal #1.
3. Provide transparency and accountability of GME programs, with respect to the stewardship of public funding and the achievement of GME goals.
4. Clarify and strengthen public policy planning and oversight of GME with respect to the use of public funds and the achievement of goals for the investment of those funds.
5. Ensure rational, efficient, and effective use of public funds for GME in order to maximize the value of this public investment.
6. Mitigate unwanted and unintended negative effects of planned transitions in GME funding methods.

GME Goal #1: *Encourage production of a physician workforce better prepared to work in, help lead, and continually improve an evolving health care delivery system that can provide better individual care, better population health, and lower cost.*

The committee found considerable evidence that GME financing does not encourage the production of the physician workforce that the nation needs. Under current statute, Medicare funds residents regardless of local, regional, or national workforce needs or the quality of the training programs. Accreditation and certification processes help ensure that GME programs meet professional standards and produce physicians who are ready to enter practice with required knowledge, experience, and skills. However, antitrust and fair trade prohibitions preclude accreditors from dealing with broader national objectives such as the composition of the physician workforce, the geographic distribution of GME resources, or other priority concerns—nor would it be an appropriate role for accreditors to undertake.

Chapter 2 described a variety of indicators that newly trained physicians are not adequately prepared to practice in today's health care delivery organizations (Center for Total Health, 2011; Cordasco et al., 2009; Crosson et al., 2011; MedPAC, 2010). Although expertise in care coordination, team-based care, costs of care, health information technology, cultural competence, and quality improvement are essential to contemporary medical practice, medical educators report that these skills are rarely addressed in GME curriculums or during the residency experience (Center for Total Health, 2011). Recent surveys of residents and faculty suggest that they know little about the costs of diagnostic procedures (Patel et al., 2013; Sehgal and Gorman, 2011) and that residents feel ill prepared to provide culturally competent care (Betancourt et al., 2007; Weissman et al., 2005). Department chiefs in internal medicine, pediatrics, general surgery, and obstetrics/gynecology in Kaiser Permanente's Northern California region report that recently trained physicians have difficulty performing simple office-based procedures and managing routine conditions (e.g., minor depression and anxiety, minor chronic pain, certain acute musculoskeletal problems, basic dermatological conditions, and headaches) (Crosson et al., 2011). Yet the Centers for Medicare & Medicaid Services (CMS) has no way to reward residency programs that improve outcomes in these areas because, as Chapter 3 describes, Medicare GME payments are based on rigid formulas that do not distinguish between high- and low-performing residency programs.

Chapter 2 also described commonly held concerns about the proportion of GME directed toward subspecialty training (considered too high) and toward primary care (considered too low). The number of subspecialty programs accredited by the Accreditation for Graduate Medical Education

(ACGME) rose by more than 30 percent from academic years 2003-2004 to 2012-2013. The number of fellows in subspecialty training grew by 40 percent (ACGME, 2013). Although the ideal proportions of primary care, specialty, and subspecialty are unknown, the evidence does suggest a worsening imbalance. Numerous reports describe a "hidden curriculum" during residency training that actively discourages primary care specialization (COGME, 2010; Dowdy, 2011; Erikson et al., 2013; Kussmaul, 2013; Warm and Goetz, 2013). The transition to a highly specialized physician workforce clearly occurred with little strategic direction or evidence-based judgment.

Concerns that the nation faces a looming physician shortage, particularly in primary care specialties, are common. The committee did not find credible evidence to support such claims. Too many projections of physician shortages build on questionable provider–patient ratios, fail to consider the marked geographic differences in physician supply, and ignore recent evidence of the impacts of more effective organization, new technology, and deployment of health personnel other than physicians (Altschuler et al., 2012; Auerbach et al., 2013a,b; Bodenheimer and Smith, 2013; Ghorob and Bodenheimer, 2012). More conclusive evidence is needed to justify interventions aimed at increasing the number of GME positions at a faster rate than is already occurring.

Regardless of the numbers debate, there is a dearth of successful models for promoting primary care careers and influencing trainees' career choices. If the GME system is to maintain robust capacity in primary care training and to encourage primary care careers, there should be a dedicated effort to identify or develop effective interventions. For example, GME funds might be used to finance new incentives for choosing a primary care career. The incentives might focus on the individual trainee by offering medical school loan repayment in exchange for a long-term commitment to primary care practice—on a greater scale than currently provided by HRSA—or else provide incentives to educational institutions that sponsor priority residency programs by paying a substantially higher per-resident amount (PRA) for primary care trainees. No organization currently has the mandate to investigate the utility of such interventions or to develop effective alternatives. Strategic investment in GME cannot be achieved without robust research and demonstration capacity.

GME Goal #2: *Encourage innovation in the structures, locations, and designs of GME programs to better achieve Goal #1.*

Chapter 3 described how Medicare's GME payment formulas discourage innovation and systematically disadvantage residency programs that are based in non-hospital ambulatory care settings as well as children's, safety

net, and other hospitals that care primarily for non-elderly patients. Under current statute and regulation, Medicare distributes GME monies directly to teaching hospitals in two independent funding streams: (1) direct graduate medical education (DGME) payments to cover the salaries and benefits of residents and faculty and certain other costs, and (2) an indirect medical education (IME) adjustment to Medicare prospective payment system (PPS) inpatient rates to compensate for the inefficiencies thought to be associated with sponsoring residency programs. Both funding streams are directly tied to hospitals' volume of Medicare inpatients. In 2012, IME accounted for $6.8 billion or 70.8 percent of total Medicare GME payments to teaching hospitals. DGME payments totaled $2.8 billion or 29.2 percent. Except for an accreditation requirement, the payments are essentially guaranteed regardless of program performance, efficiency, or quality of training, or whether the types of physicians trained reflect national or regional health needs.

The committee concluded that continued Medicare GME funding is warranted only if its distribution is redesigned to help produce a physician workforce better able to support a high-value, high-performing health care system.

Several modifications to Medicare GME financing are essential to encourage innovation and to better meet local, regional, or national health care workforce requirements:

- First, the funds should be distributed to the organizations that sponsor residency programs, not just the teaching hospitals that employ or otherwise rely on residents' services. Under the status quo, nearly all GME training occurs in hospitals—including primary care residencies—even though non-hospital settings are where most physicians will spend their careers and where most people seek health care services. As noted in Chapter 3, about half of all residency programs are currently sponsored by teaching hospitals. Hospitals have little incentive to train residents in community ambulatory settings. Transferring fiduciary control to all sponsoring institutions increases the likelihood that GME funds will flow to and increase training in non-hospital settings.
- Second, as the Medicare Payment Advisory Commission (MedPAC) and others have recommended, GME payments should reward performance and reflect local, regional, and national workforce needs (MedPAC, 2010). This will require not only the introduction of performance-based payment methods but also a change in how Medicare determines which training slots are eligible for GME payments. As noted in Chapter 3, with some exceptions, Medicare regulations limit each hospital's number of funded slots accord-

ing to their number in 1996, nearly two decades ago. As a result, there are significant inequities in the geographic distribution of Medicare-funded slots. In addition, the regulations do not require that today's funded slots be in the specialties that were originally funded in 1996. Hospitals are free to replace what were previously primary care slots with subspecialty training slots—regardless of local workforce priorities. The committee recognizes that the transformation to performance-based payment is necessarily a longer-range goal. Considerable work needs to be done to determine the types and location of physician trainees who should receive priority and to develop and test the performance measures for GME payments. Funding for such developmental work is essential and should be funded using existing Medicare GME dollars.

- Third, the linkage between hospital Medicare patient volume and GME payment should be phased out. At first blush, tying Medicare GME payments to Medicare patient volume seems logical and appropriate. However, this linkage has important negative consequences. Many important training sites tend to serve a younger population. Safety net providers, for example, care for patients of all ages, but their GME payment rates are reduced because they tend to have fewer Medicare patients than other teaching hospitals. Because it is very unusual for a child to be Medicare-eligible, pediatric training programs based in freestanding children's hospitals do not have the same access to Medicare GME funding as other hospitals. The CHGME program was created to remedy this situation, but, as noted above, its reauthorization has been uncertain.
- Finally, the separate DGME and IME funding streams should be merged into a uniform PRA. The committee could not find a justification for continuing the separate funding streams. Moving to a uniform, single PRA payment will simplify administration and facilitate program oversight, transparency, and evaluation. The committee also recommends that a portion of current GME funding be preserved for the developmental work described above and also for new training slots (where needed), ongoing program management, policy making, and evaluation.

GME Goal #3: *Provide transparency and accountability of GME programs, with respect to the stewardship of public funding and the achievement of GME goals.*

The committee found little informative data on Medicare or Medicaid GME financing and its outcomes. CMS GME reporting requirements

are minimal and do not generate the kind of standardized data essential to program evaluation. The previous chapters show that the most fundamental questions about GME financing and program outcomes cannot be answered. These include, for example, questions regarding the bottom-line financial impact of residency training programs on teaching institutions, how GME public funds are used for educational purposes, the extent to which residents are trained in community-based settings, the specialties and demographic characteristics of funded trainees, the practice locations of recent trainees, whether recent trainees accept Medicare and Medicaid patients once they enter practice, and the quality of care delivered by these physicians.

As Chapter 3 reported, teaching hospitals are asked only to report the data elements that are needed to calculate Medicare IME and DGME payments. The DGME cost data are not complete, standardized, or audited (Wynn et al., 2006, 2013). The revenue impact and cost savings associated with sponsoring residents are neither tracked nor reported; in fact, they are rarely acknowledged when the costs of GME are examined. Medicaid GME has no reporting requirements. Policy makers—including CMS Medicaid officials—have to rely on privately sponsored surveys of state Medicaid programs to obtain estimates of GME spending and to learn about state GME efforts (Henderson, 2013; Spero et al., 2013).

Despite numerous efforts by researchers, no one has been able to adequately document the financial impact of residency training programs on teaching hospitals (Wynn et al., 2013). At the outset of this study, the committee organized a small workgroup to interview key GME officials at four academic medical centers and work with them to collect and assess available Medicare GME cost data (see Chapter 3). Despite hours of investigation and the efforts of numerous individuals, the GME officials were unable to produce comprehensive, comparable financial data. It became clear that even GME program staff have limited information regarding the net financial impact of GME on their own institutions. A 2002 survey of family medicine residency programs came to a similar conclusion: More than half of the programs did not even know how much Medicare GME funding they received (Chen et al., 2002).

The absence of transparency is a serious concern in a nearly $10 billion public program. The committee recommends that future GME funding be contingent on standardized reporting that will allow program evaluation and inform future program improvements. The committee strongly urges that Congress require CMS to direct a portion of Medicare GME funds toward the development of a minimum dataset for future GME reporting and program evaluation.

GME Goal #4: *Clarify and strengthen public policy planning and oversight of GME with respect to the use of public funds and the achievement of goals for the investment of those funds.*

Chapter 4 revealed that no one entity has the authority or explicit responsibility for overseeing the public's investment in GME. Current statute requires only that residency programs be accredited by the ACGME, American Osteopathic Association (AOA), Commission on Dental Accreditation, or Council on Podiatric Education, in order to receive federal funding. The ACGME's Next Accreditation System promises significant progress toward 21st-century health system objectives. But, as noted earlier, accreditation alone cannot ensure that the composition and competencies of the physician workforce meet the nation's needs.

The Medicare GME program should have a transparent, simple, and logical organizational infrastructure for strategic policy development and implementation; program oversight; performance measures to monitor program outcomes with respect to strategic goals; and easily understood and accessible performance reports for the public, stakeholders, and policy makers.

The existing organizational infrastructure for GME program oversight and policy making is very limited. The relevant federal advisory groups and research centers—most notably the Council on Graduate Medical Education (COGME), MedPAC, and the CMS Center for Medicare & Medicaid Innovation (CMMI)—do not have authority over GME funding or influence over its outcomes.

COGME, a federal advisory committee associated with the Bureau of Health Professions, provides some GME policy advice to Congress and the Secretary. But it is housed in an agency—HRSA—whose focus is on programs for low-income and disadvantaged populations and is without regulatory authority to effect CMS programs. Moreover, COGME is grossly underfunded; its recent appropriations support only 1.3 full-time equivalents (FTEs) (HRSA, 2012). In addition, COGME depends on the volunteer efforts of its members who, by statute, are mandated to represent stakeholders. As a result, COGME lacks important technical expertise and the capacity for objective and impactful policy analysis.

MedPAC, in its role as advisor on Medicare programs, has produced or commissioned numerous valuable reports on GME (Cordasco et al, 2009; MedPAC, 1999, 2001, 2003, 2009, 2010; Wynn et al., 2006, 2013). However, its attention to GME is relatively infrequent, as GME accounts for less than 2 percent of total Medicare spending. MedPAC's mandate is to focus on much broader issues of physician and hospital payment as well as beneficiaries' access to and quality of care (MedPAC, 2013).

CMMI has robust resources for developing, testing, and accelerating the adoption of new payment and service delivery models. However, its current statutory mandate does not include GME and to do so may be an unwise distraction from its major focus on other innovations in Medicare and Medicaid (CMMI, 2012).

Thus, a new organizational structure is required to oversee the transformational changes of a new GME program. As Chapter 4 notes, several elements will be essential to effective oversight of public funding for GME. These include

- sufficient resources, authority, and conflict of interest protections to develop objective guidance regarding GME program goals;
- explicit authority to develop and implement new payment methodologies, including performance measures to monitor program outcomes;
- transparent processes and user-friendly public reporting; and
- the ability to convene, coordinate, and promote collaboration between and among federal agencies and private accreditation and certification organizations.

Goal #5: *Ensure rational, efficient, and effective use of public funds for GME in order to maximize the value of this public investment.*

As the above text indicates, the committee concluded there is a fundamental misalignment between the rules governing Medicare GME financing and the objectives of a high-value health care system. Rather than embrace innovation and the preparation of physicians in the interests of the nation's health, the current system yields a variety of undesirable consequences and provides minimal opportunity for strategic investment. Formulating smart financing strategy will require not only an organizational infrastructure to consider the options but also dedicated monies to support the testing of innovative payment and educational models for future broader-scale implementation. As noted in the above review of Goal #1, the committee recommends that a portion of current GME funds be redirected to demonstrations of GME payment models that will realign the incentives in GME financing toward the production of a physician workforce that meets the nation's health needs.

Table 5-1 provides a brief summary of recommended next steps.

TABLE 5-1 Goals and Recommended Next Steps for Reforming Medicare Graduate Medical Education (GME) Governance and Financing

Goals for Future GME Funding	Recommended Next Steps
Goal #1 Encourage production of a physician workforce better prepared to work in, help lead, and continually improve an evolving health care delivery system that can provide better individual care, better population health, and lower cost.	1. Amend Medicare statute to allow for a new Medicare GME performance-based payment system with incentives for innovation in the content and financing of GME in accord with local, regional, and national health care workforce priorities. 2. Create a high-level GME policy and financing infrastructure within the Department of Health and Human Services (HHS) and the Centers for Medicare & Medicaid Services (CMS) with responsibility for federal GME policy, including development, testing, and implementation of new payment methods. *See Recommendations 1, 2, 3, and 4.*
Goal #2 Encourage innovation in the structures, locations, and designs of GME programs to better achieve Goal #1.	1. Distribute Medicare GME funds to the organizations that sponsor residency programs via a national per-resident amount (geographically adjusted). 2. Create one unified GME fund to replace the separate Indirect Medical Education and Direct Graduate Medical Education funding streams. 3. Conduct demonstrations to identify feasible and effective performance-based payment methodologies. 4. Delink Medicare GME payments from teaching institutions' Medicare patient volume. *See Recommendations 3 and 4.*
Goal #3 Provide transparency and accountability of GME programs, with respect to the stewardship of public funding and the achievement of GME goals.	1. Require standardized reports from sponsoring organizations as a condition for receiving Medicare GME funding. 2. Develop a minimum dataset for sponsors' reports to facilitate performance measurement, program evaluation, and public reporting. 3. Develop performance measures to monitor program outcomes with respect to those goals. 4. Provide easy access to GME reports for the public, stakeholders, researchers, and others. *See Recommendation 2.*

Goal #4 Clarify and strengthen public policy planning and oversight of GME with respect to the use of public funds and the achievement of goals for the investment of those funds.	1. Create a high-level GME policy and financing infrastructure within HHS and CMS with responsibility for federal GME policy, including development, testing, and implementation of new payment methods. *See Recommendation 2.*
Goal #5 Ensure rational, efficient, and effective use of public funds for GME in order to maximize the value of this public investment.	1. Use a portion of current Medicare GME funds to fund the new infrastructure, developmental activities, new training slots (where needed), and program evaluation. *See Recommendations 1, 2, 3, and 4.*
Goal #6 Mitigate unwanted and unintended negative effects of planned transitions in GME funding methods.	1. The GME Policy Council should develop a strategic plan—in consultation with the CMS GME Center and GME stakeholders— that allows for a careful phase-in of the reforms. 2. The Council should ensure that its blueprint for the transition includes a rigorous strategy for evaluating its impact and making adjustments as needed. *See Recommendation 2.*

Goal #6: *Mitigate unwanted and unintended negative effects of planned transitions in GME funding methods.*

The committee's recommendations, described below in greater detail, provide an initial roadmap for reforming the Medicare GME payment system and for building an infrastructure to drive strategic investment in the nation's physician workforce. These recommendations call for a dramatic departure from the status quo. The committee acknowledges that repurposing and redesigning Medicare GME funding will be disruptive for teaching hospitals and other sponsors of residency programs. Sudden changes in cash flow for teaching institutions could undermine their capacity to prepare for the new GME financing system and could negatively impact their other essential missions. Transition to a new funding methodology must seek to mitigate these risks. In addition, the transition must accommodate the need for residency programs to honor long-term commitments to trainees, and for existing arrangements with affiliated training organizations to be renegotiated. A well-planned, long-term period of transition is of paramount importance.

RECOMMENDATIONS FOR REFORMING GME GOVERNANCE AND FINANCING

Significant reforms are needed to ensure value in the public's sizeable investment in graduate medical education. These recommended reforms, presented below, cannot occur without legislative action. The rules governing the Medicare GME financing system are rooted in statute. The committee strongly urges Congress to amend Medicare law and regulation to begin the transition to a performance-based system of Medicare GME funding.

Although clearly far-reaching and a marked change from the status quo, the committee's recommendations are based on a careful consideration of the evidence on the outcomes and unintended consequences of the current GME financing system (described above and in the previous chapters). The recommendations are also based on the fundamentals of good governance, particularly transparency and accountability to the public for program outcomes (as described in Chapter 4). CMS has successfully accomplished major payment transitions before—during implementation of the PPS in the 1980s and the Medicare Resource-Based Relative Value Scale (RBRVS) payment system in the subsequent decade (Braun and McCall, 2011; Hsiao et al., 1992; RAND Health, 2006). Both the PPS and RBRVS reforms involved far greater percentages of Medicare spending.

Transforming Medicare's role in financing GME will be a complex undertaking requiring careful planning. The committee's recommendations outline the objectives for the transition and the building blocks of a

reformed, value-based Medicare GME financing program. A well-resourced program infrastructure should be established quickly to formulate a more detailed roadmap than the one presented here.

These recommendations will require several transitions that should be gradually phased in over an extended period. Every effort should be made to mitigate unwanted and unintended negative effects. The committee recommends 10 years for the full Medicare GME transition. As noted earlier, residency programs must honor multiyear commitments—some as long as 6 years—to trainees. Existing contractual arrangements with affiliated training organizations may require renegotiation. For example, most of the VHA residency programs are sponsored by a medical school or teaching hospital through locally negotiated affiliation agreements (Chang, 2012). As Chapter 3 noted, nearly 130 VHA health facilities had affiliation agreements in 2011 with 151 medical schools (Veterans Affairs Office of Academic Affiliations, 2012). In 2012, 37,800 residents rotated through VHA facilities.[1]

Invest Strategically

RECOMMENDATION 1: Maintain Medicare graduate medical education (GME) support at the current aggregate amount (i.e., the total of indirect medical education and direct graduate medical education expenditures in an agreed-on base year, adjusted annually for inflation) while taking essential steps to modernize GME payment methods based on performance, to ensure program oversight and accountability, and to incentivize innovation in the content and financing of GME. The current Medicare GME payment system should be phased out.

The committee debated—at great length—the justification and rationale for federal GME funding either through the Medicare program or through other avenues of funding, given the lack of comparable federal funding for other areas of health care education such as undergraduate medical education, for other health care professionals, or for other areas important to society and in shortage. At a time when all federal programs are under close scrutiny and information about the return on the public's GME investment is scarce, the committee cannot support continuing Medicare GME funding at current levels ($9.7 billion in fiscal year 2012) without a realignment of the program's incentives. The continuation and appropriate level of Medicare GME funding should be reassessed after the program reforms have in been place for some period of time. Ten years is an appropriate time frame to consider.

[1] Personal communication, Barbara K. Chang, Director of Medical and Dental Education, VA Office of Academic Affiliations, July 15, 2013.

Three critical considerations led the committee to this conclusion: first, the health delivery system is in the midst of significant change; second, these changes reflect increasing attention to achieving the triple aim (as the IOM has been advocating since the publication of *Crossing the Quality Chasm* in 2001); and, third, these monies (IME and DGME combined) could be used to leverage changes in physician residency training to produce a workforce more suited to achieving the triple aim.

Build an Infrastructure to Facilitate Strategic Investment

RECOMMENDATION 2: Build a graduate medical education (GME) policy and financing infrastructure.

2a. Create a GME Policy Council in the Office of the Secretary of the U.S. Department of Health and Human Services. Council members should be appointed by the Secretary and provided with sufficient funding, staff, and technical resources to fulfill the responsibilities listed below:

- **Development and oversight of a strategic plan for Medicare GME financing;**
- **Research and policy development regarding the sufficiency, geographic distribution, and specialty configuration of the physician workforce;**
- **Development of future federal policies concerning the distribution and use of Medicare GME funds;**
- **Convening, coordinating, and promoting collaboration between and among federal agencies and private accreditation and certification organizations; and**
- **Provision of annual progress reports to Congress and the Executive Branch on the state of GME.**

2b. Establish a GME Center within the Centers for Medicare & Medicaid Services with the following responsibilities in accordance with and fully responsive to the ongoing guidance of the GME Council:

- **Management of the operational aspects of GME Medicare funding;**
- **Management of the GME Transformation Fund (see Recommendation 3), including solicitation and oversight of demonstrations; and**

- **Data collection and detailed reporting to ensure transparency in the distribution and use of Medicare GME funds.**

The committee urges Congress and the Secretary of Health and Human Services (HHS) to take immediate steps to establish a two-part governance infrastructure for federal GME financing. Transforming Medicare GME financing will require an overarching policy development and decision-making body and a separate operations center with the capacity to administer GME payment reforms and to solicit and manage demonstrations of new GME payment models. A portion of current GME monies should be allocated to create and sustain these two new entities. No additional public funds should be used. Recommendation 3 describes the creation of a GME Transformation Fund for this purpose.

The committee considered a range of organizational alternatives for establishing this new infrastructure, including an expansion of COGME, new units within HHS and CMS, an independent congressional advisory commission comparable to MedPAC, a directive to MedPAC to assume an expanded role in Medicare GME policy, and other options. Table 5-2 describes the pros and cons of selected options. As noted earlier, several factors were paramount: sufficient and durable resources, regulatory authority over Medicare payment policy, capacity for objective and expert research, and ability to promote collaboration between public and private agencies. Pragmatic concerns were also paramount. The fate of the unfunded National Health Care Workforce Commission was instructive in this regard. Would new appropriations or funding sources be required for the new entities? Programs that are subject to the appropriations cycle face continuing uncertainty about future funding. Could a new entity exercise independence from undue political pressures? How would the new policy body influence the flow of Medicare funds and CMS research and demonstration programs?

Ultimately, the committee decided that the best alternative is to create the governance structures within the Executive Branch agency that has the necessary authorities over the Medicare program and can also draw on Medicare resources. This authority exists only within CMS and HHS. The federal agencies that currently provide advice on GME policy are not situated to effect change. Although the independent MedPAC has deep analytic expertise and knowledge of Medicare, as a congressional body, it cannot direct an Executive Branch agency. COGME, the HRSA advisory committee, lacks authority over Medicare spending and is not located, resourced, or appropriately organized to oversee large-scale demonstrations of alternative GME payment models or to provide independent policy advice. As a result, the committee concluded that COGME will no longer be required when the new governance structure is operational.

TABLE 5-2 Pros and Cons of Selected Organizational Options for Strengthening the Governance of Medicare Graduate Medical Education (GME) Funding

Option	Description	Pros	Cons
Expand COGME	• Increase COGME appropriations to support a significant expansion in its oversight of GME policy and research.	• COGME is already chartered as a federal advisory committee on GME policy. • COGME has been producing reports on GME policy since 1998.	• COGME is in the Health Resources and Services Administration (HRSA), an agency with limited relevance to and no regulatory authority over Medicare policy or funds distribution. • COGME's congressional charter requires its members to represent stakeholder interests rather than objective policy analysis or technical research. • Potential political interference from organizations with vested interests in GME policy. • Would require substantial increase in appropriations and would be subject to annual changes in discretionary appropriations.
Create GME infrastructure in the Department of Health and Human Services (HHS)	• Create a GME Policy Council in the Office of the Secretary to lead and oversee reforms in Medicare GME policies. • Also create a GME Center in CMS to implement changes in GME funding, oversee pilots and demonstrations, and facilitate scaling up of successful pilots.	• The Secretary of HHS has direct authority over CMS operations. Placement in the Secretary's office provides high level visibility. • CMS has direct responsibility for Medicare policy and funds distribution and the capacity to collect GME funding data • Close intradepartmental, organizational linkage between the Council and CMS center can facilitate GME policy reforms and program oversight. • Could be funded with existing Medicare GME monies.	• Potential political interference. • Creates further bureaucracy in a very large federal agency.

Expand MedPAC	• Increase appropriations to MedPAC to support a dedicated and ongoing focus on GME policy	• MedPAC has deep knowledge of Medicare and significant technical expertise (among its staff and its members); it has produced numerous reports related to GME payment policy.	• GME is not a primary MedPAC focus as it accounts for less than 2 percent of Medicare expenditures. • As a congressional agency, MedPAC cannot direct the activities of an executive branch agency. • Subject to annual changes in discretionary appropriations.
Create an independent GME congressional agency	• Create an independent, congressional GME advisory agency to advise and oversee GME reform efforts	• Political independence	• Congressional agencies cannot have direct authority over CMS GME policies or operations. • Cannot be funded with Medicare GME funds. • Would require new funding source and be subject to annual changes in discretionary appropriations.
Create a public/ private GME advisory group	• Create a new organization that is jointly sponsored by a public agency and interested private organizations.	• Might balance conflicting public and private interests.	• Would require new funding source • Would require a private-sector "champion" to facilitate private-sector support.

GME Policy Council

Thus, the committee recommends the creation of a GME Policy Council in the Office of the Secretary of HHS. The Council should have robust resources (from the Transformation Fund), skilled staff, high visibility, and protections from conflicts of interest. The Council members should be selected to ensure necessary expertise and vetted to protect against bias and conflict of interest. The committee suggests that Congress direct the Secretary to appoint no more than 12 members to the Council with staggered 6-year terms. With MedPAC's composition as a guide, this size is appropriate. MedPAC has 17 commissioners and an estimated budget of $11.5 million; its mandate encompasses all Medicare policy. In contrast, Medicare GME payments account for less than 2 percent of the total Medicare budget.

The majority of Policy Council members should be "non-stakeholders" with broad expertise related to physician and health professions education, workforce policy, health services research, health care financing, and consumer and patient perspectives. The VA and the Department of Defense should each assign an ex officio liaison to the Council. The Secretary should also consider providing an ex officio position for a representative of a GME accreditation organization.

The Policy Council should be charged with broad responsibility for the reform of Medicare GME financing and ongoing program oversight and evaluation. This will entail multiple challenging tasks. At the outset, the Council should develop a strategic plan for program oversight and evaluation, implementation of new GME payment rules, and demonstrations of new GME payment models and performance metrics. In the longer term, the Council should be charged with prioritizing the allocation of GME funds across identified domains, such as specialty or subspecialty, geographic location, training site, or types of sponsoring organizations (e.g., teaching hospitals, hospital consortiums, educational institutions, clinics, teaching health centers [THCs], or local or regional health care workforce agencies). The Council should also provide advice on future increases or decreases in the amount of Medicare funding and the number of Medicare-supported training slots.

Public reporting will be integral to the Policy Council's credibility and accountability. The Council should report annually to the Secretary, Congress, and the public. To help minimize inappropriate political interference, the reports should be issued simultaneously to Congress, the Secretary, and the public. The committee urges Congress to require MedPAC to review and comment on the Council's reports in a timely manner. Early on, the Council should advise the CMS GME Center (described below) on which data the Center should routinely collect from GME sponsoring organiza-

tions to produce the reports. The Council's reports should be produced in collaboration with the GME Center and, over time, provide information on the outcomes of GME funding, including the results of the GME Center's demonstration programs. As noted earlier, a number of topics should be explored by the Council and the Center in collaboration. These include, for example, the financial impact of residency training programs on teaching institutions, how GME public funds are used for educational purposes, the extent to which residents are trained in community-based settings, the specialties and demographic characteristics of funded trainees, the practice locations of recent trainees, whether recent trainees accept Medicare and Medicaid patients once they enter practice, and the quality of care delivered by these physicians.

Finally, the Policy Council should also have the capacity and authority to facilitate meaningful dialogue and negotiation among key stakeholders (both public and private). The Council should provide such a forum to encourage compatible, non-duplicative GME accreditation, certification, and regulatory standards and processes as well as regional and national workforce planning and cooperative and coordinated research.

CMS GME Center

The second organizational piece of the recommended infrastructure is a GME Center in CMS to manage the GME Operational and Transformation Funds (see Recommendation 3). This would entail numerous administrative and policy-related responsibilities, including implementation of new GME reporting requirements, technical support to new and existing GME sponsoring organizations, conduct of pilots and demonstrations, and scaling up of successful pilots. The committee viewed the role of the Center as similar to that of the CMS Federal Coordinated Health Care Office (FCHCO) in that it would provide focused attention to a challenging problem and also provide the authority to coordinate across programs. The FCHCO was established to attend to the long-term, difficult-to-resolve concerns about the high costs and poor quality of care provided to the Medicare–Medicaid dual eligible population.[2] The Affordable Care Act, which created the Office, gave it the authority to integrate care under both Medicaid and Medicare and to improve coordination across federal agencies, states, and stakeholders.

[2] See http://www.cms.gov/About-CMS/Agency-Information/CMSLeadership/Office_FCHCO.html.

Establish a Two-Part Medicare GME Fund

RECOMMENDATION 3: Create one Medicare graduate medical education (GME) fund with two subsidiary funds:

3a. A *GME Operational Fund* to distribute ongoing support for residency training positions that are currently approved and funded.

3b. A *GME Transformation Fund* to finance initiatives to develop and evaluate innovative GME programs, to determine and validate appropriate GME performance measures, to pilot alternative GME payment methods, and to award new Medicare-funded GME training positions in priority disciplines and geographic areas.

The committee recommends allocating Medicare GME funds to two distinct subsidiary funds:

- A *GME Operational Fund* to distribute PRA payments to sponsoring organizations for approved Medicare-eligible training slots (see Recommendation 4). As Figure 5-1 illustrates, this fund would finance ongoing residency training activities sponsored by teaching hospitals, GME consortiums, medical schools and universities, freestanding children's hospitals, accountable care organizations, integrated health care delivery systems, community-based health centers, regional workforce consortiums, and other qualified entities that are accredited by the relevant organization.[3]
- A *Transformation Fund* to finance new training slots (including pediatric residents currently supported by the CHGME program and other priority slots identified by the GME Policy Council), to create and maintain the new infrastructure (GME Policy Council and CMS GME Center), to ensure adequate technical support for new and existing sponsoring organizations, to sponsor development of GME performance metrics, to solicit and fund large-scale GME payment demonstrations and innovation pilots, and to support other priorities identified by the GME Policy Council. The committee expects that the *Transformation Fund* will provide the most important single dynamic force for change. Box 5-3 describes recommended principles for the fund's organization and ongoing operations. All GME sponsor organizations should be eligible to

[3] See Chapter 4 for information on current program accreditation.

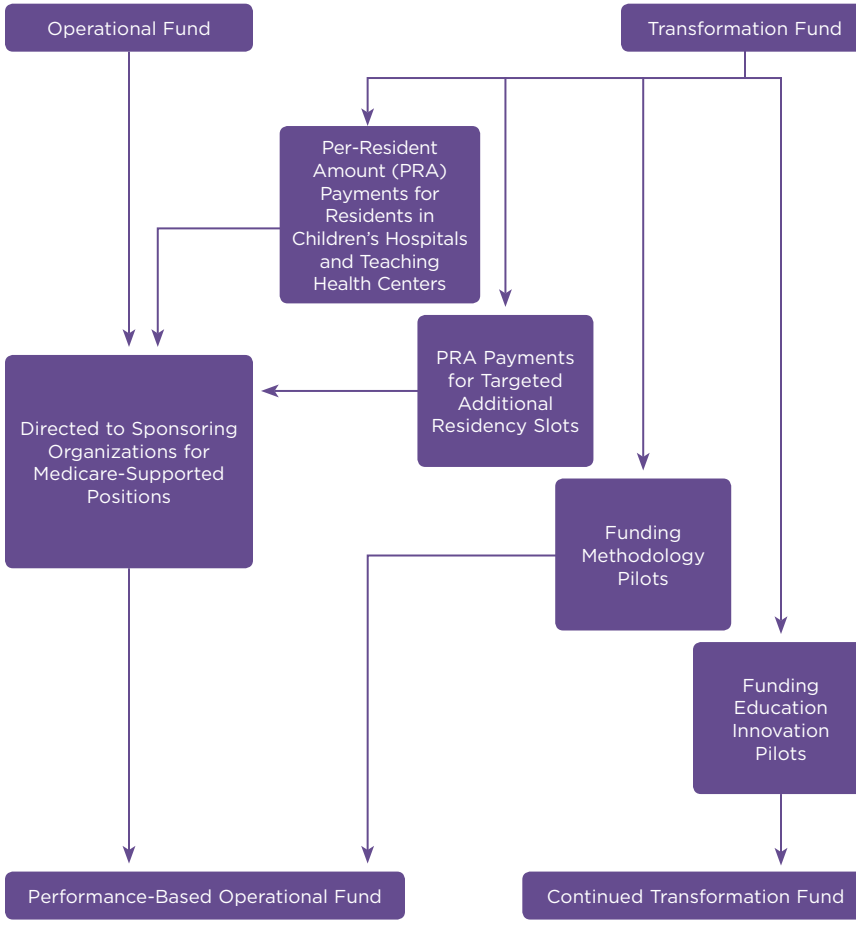

FIGURE 5-1 Proposed Medicare graduate medical education funding flow.

compete for innovation grants and additional funding for new training positions.

Allocations to the Operational and Transformation Funds

Recommendation 1 specified that total Medicare GME funding should remain at the current level (in an agreed-on base year). The initial allocation to the Operational Fund should provide funding for the then-current number of Medicare-supported GME positions and be further supplemented by

BOX 5–3
Catalyzing Innovation in GME: Parameters for the Institute of Medicine (IOM) Committee's Proposed Transformation Fund

One of the key elements of the IOM committee's recommendations is the creation of a graduate medical education (GME) Transformation Fund to finance demonstrations of innovative GME payment methods and other interventions to produce a physician workforce in sync with local, regional, and national health needs. All GME sponsor organizations should be eligible to compete for innovation grants. The committee recommends that the fund's organization and ongoing operations be based on the following principles.

- Goal of the program: to support physician and other health professional education toward achievement of the "triple aim," that is, improving the individual experience of care, improving the health of populations, and reducing the per-capita costs of care
- Four operational principles
  - Speed and efficiency
  - Measurability and evaluation
  - Sustainability
  - Scalability
- Identifying priority topics
  - Investigator- and program-initiated
  - Focus on national-, regional-, and state-level issues
- Potential questions for early Requests for Proposals
  - What are feasible and valid measures of training success?
  - What new models of financing might better achieve the triple aim?
    - Voucher systems?
    - Differential per-resident amounts?
    - Allowing institutions to bill third parties for certain residents' services?
  - What interventions work best to increase the racial and ethnic diversity of the physician workforce? To improve physicians' cultural competence?
  - What models of interprofessional training—including physician assistants, advanced practice registered nurses, and other clinicians—better prepare physicians for team-based practice and care delivery in community settings?
  - Should GME funds be used for advanced training in other disciplines, for example, physician assistants and advanced practice registered nurses?
  - How might training or training funding expand across the physician education continuum (from undergraduate to GME to continuing medical education) to maximize efficiency?
  - How might GME training programs be streamlined, for example, reducing training time through earlier specialization or other mechanisms?
- "Innovation innovation," that is, attention to scalability in projects to learn what is required to achieve innovation in real-world programs

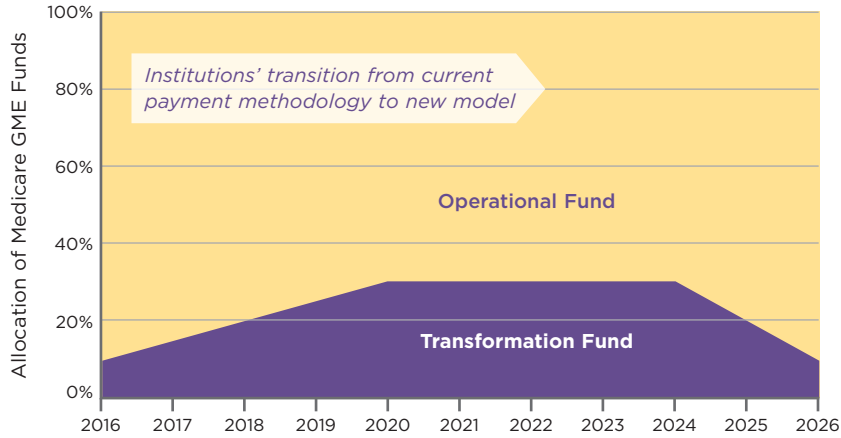

FIGURE 5-2 Allocation of Medicare graduate medical education funds to the Operational and Transformation Funds over time (by percentage).

monies from the Transformation Fund in order to fold funding for residents from CHGME and THC programs into the Medicare GME program. These training positions should receive the same PRA as others.

Figure 5-2 illustrates the committee's recommended allocation of Medicare GME monies to the Operational and Transformation Funds during the transition to the new payment system. It will take time to build the capacity for GME transformation activities and for teaching institutions to adjust to the new funding arrangements described below in Recommendation 4.

As illustrated in Figure 5-2, the committee suggests that the Operational Fund allocation begin at 90 percent of the total Medicare GME fund, decrease to 70 percent over roughly 3 years and remain at that level for several years, and then return to 90 percent by the 10th year. The Transformation Fund should be allocated the balance of the funds—thus starting at 10 percent of the total, moving up to 30 percent as GME pilots and research activities gear up, and then returning to the 10 percent allocation as successful pilots and research establish the basis for broad application of GME improvement initiatives, including additional slots.

Modernize Medicare GME Payment Methodology

RECOMMENDATION 4: Modernize Medicare graduate medical education (GME) payment methodology.

- **4a. Replace the separate indirect medical education and direct GME funding streams with one payment to organizations sponsoring GME programs, based on a national per-resident amount (PRA) (with a geographic adjustment).**
- **4b. Set the PRA to equal the total value of the GME Operational Fund divided by the current number of full-time equivalent Medicare-funded training slots.**
- **4c. Redirect the funding stream so that GME operational funds are distributed directly to GME sponsoring organizations.**
- **4d. Implement performance-based payments using information from Transformation Fund pilot payments.**

The purchasing power of Medicare GME funding provides a significant opportunity for strategic investment in the physician workforce. The separate IME and DGME funding streams, however, present a formidable obstacle to taking advantage of this opportunity. Continuing separate IME and DGME funding streams would hamper efforts to collect and report standardized data, to link payments with program outcomes, to reduce geographic inequities in GME payments, and to minimize administrative burden. Separate funding streams create unnecessary complexity, and there is no current rationale for linking GME funding to Medicare patient volume because the care delivered by GME trainees and graduates extends across the population. Finally, maintaining the links between historic allocations of DGME costs and training slots, approved circa 1996, with future payments only prolongs the current inequities in the distribution of GME monies.

Thus, the committee agreed that Medicare's current GME payment mechanisms should be replaced with a method that provides a pathway to performance-based GME financing. As noted earlier, the committee is well aware that this recommendation will be disruptive for teaching hospitals and other sponsors of residency programs. This transition should be phased in and carefully planned under the guidance of the GME Policy Council, in consultation with the CMS GME Center and GME stakeholders. The Council should ensure that its blueprint for the transition includes a rigorous strategy for evaluating its impact and making adjustments as needed.

Table 5-3 describes the advantage of these changes and their likely impact on Medicare GME payment methodology.

TABLE 5-3 Key Features, Advantages, and Impacts of the Proposed Graduate Medical Education (GME) Payment Methodology

Features of the Proposed GME Payment Methodology	Advantages Over the Current Medicare GME Payment Methodology	Anticipated Impact
National per-resident amount (with inflation and geographic adjustments)	• Removes inequities due to historic cost data and makeup of patient population (e.g., non-elderly). • Includes all physician residents regardless of training site (including, e.g., children's hospitals, rehabilitation facilities, cancer centers, and psychiatric hospitals).	• Increase in aggregate GME funding for previously disadvantaged residency programs, such as those in training institutions with fewer Medicare patients, and/or with lower density of residents.
Single payment to sponsoring organizations	• Simplifies funds distribution.	• Decrease in aggregate GME funding for some institutions.
Funds are distributed to sponsoring organizations (e.g., accountable care organizations, community-based health centers, consortiums, teaching hospitals, etc.)	• Provides a structure for accountability by linking funding to authority for GME programs. • Reduces barriers to training physicians in ambulatory settings and other community-based sites where medical care is provided.	• Disrupts funding arrangements for training sites that receive rotating residents but do not sponsor GME programs. • Sponsoring organizations will renegotiate affiliations. • New types of institutions and groups of institutions will have the opportunity to become sponsoring organizations.
GME Transformation Fund	• Provides dedicated funding for innovation in GME financing, new approaches to training, and performance measurement. • Provides opportunity to fund new training slots where needed.	• Provides an incentive for innovation and an opportunity for incremental funding via funding of pilot projects. • As dollars are reallocated to the Transformation Fund, the "guaranteed" level of GME funding, distributed through the per-resident amount, will decrease gradually.
Transition to performance-based payment	• Allows for redistribution of funding to align with achievement of explicit goals.	• GME sponsors will have strong financial incentives to improve targeted outcomes. • GME funding will be leveraged to meet national, regional, and state needs. • Greater transparency and accountability.

Phased Implementation

As noted above, the committee recommends a 10-year time line for the incremental phase-in of the new payment methodology. Timing will be an important consideration. A noteworthy point is that Medicare's PPS payment reforms, for example, were implemented over a 4-year period (Mayes and Berenson, 2006) and the transition to RBRVS physician payments was over 5 years (Iglehart, 1990). Planning for and implementation of Recommendations 4a (replacing the IME and DGME separate funding streams with a national PRA), 4b (setting a national PRA), and 4c (redirecting payments to sponsoring organizations) should begin quickly. Implementation of a performance-based payment system is a longer-range goal.

The Policy Council should weigh the pros and cons of aligning a phased implementation of Recommendation 4c (redirecting payments to sponsoring organizations) with turnover in residents (e.g., applying the new model to incoming classes of residents) versus an across-the-board change on a specific date. In either case, sufficient time will be needed to allow for program sponsors and "non-sponsor" teaching sites to renegotiate the terms of their financial arrangements before the allocation of federal GME funding is limited to program sponsors.

The timing of the change in funds flow will have implications for the transition to the national PRA. If the latter coincides with incoming classes, it may be appropriate to pay program sponsors for incoming residents based on the national PRA while retaining the old methodology for already enrolled residents. On the other hand, if the changes are made on a specific date, there must be some mechanism to allow institutions sustaining a significant funding cut to have sufficient advance notice and/or a gradual phase-in of reduced payment. For example, a blended rate, reflecting an increasing proportion of new to old payment methodology, could be employed. During the RBRVS transition, fees for most physician services were a blend of the new system and historical charges (Iglehart, 1990).

The committee recommends that, in the first year, children's hospitals and THCs should be eligible to participate in the Medicare GME program at the same national PRA. The GME Policy Council should determine whether other types of training sites (e.g., cancer, psychiatric, and long-term care hospitals) should be folded into the program at a later date (with funds from the Transformation Fund). The Council should also provide advice on future increases or decreases in the amount of Medicare GME funding and the number of Medicare-supported training slots.

Funds Flow

The committee recommends that fiduciary control over Medicare GME payments be given to program sponsors who, in turn, can be held accountable for producing desired outcomes. Under Recommendation 4c, Medicare GME funds will flow to program sponsors based on their total number of Medicare-funded slots instead of to teaching hospitals based on the time residents spend at their institutions and on Medicare inpatient discharges. This change in funds flow will have little impact on the many teaching hospitals that already sponsor residency programs, but it will have a major impact on teaching hospitals hosting residents sponsored by another institution.

National Per-Resident Amount

Transitioning to a uniform, single PRA payment (geographically adjusted) creates the potential for transparency, accountability, program oversight, and evaluation. It also enables a more equitable distribution of GME funds because, unlike the current system, the PRA will be equivalent across institutions except for the geographic adjustment.

As noted above, the Operational Fund should be the source of PRA payments. The PRA should be calculated with a simple division of the operational funds by the total number of current Medicare-funded training slots (in the agreed-on base year). Under current payment rules, trainees in their initial residency period (i.e., the minimum time required for board eligibility or 5 years, whichever is shorter) are counted as 1 FTE; other residents and fellows are counted (for DGME purposes) as 0.5 FTE. This approach should be maintained, at least initially, under the new system. The PRA should not be adjusted to account for a training site's Medicare caseload. Residents in freestanding children's hospitals and THCs should receive the same PRA (with supplemental funds from the Transformation Fund).

The aggregate amount of GME monies distributed via the PRA should be equivalent to the value of the Operational Fund. As Figure 5-2 shows, the committee recommends that, during the initial years of transition, an increasing portion of operational funds be transferred to the Transformation Fund for its developmental and innovation activities. Later in the 10-year period, as successful pilots are implemented on a broader scale and performance payment methods are in place, most of the transformation funds should be absorbed back into the Operational Fund.

Eligible Training Slots

The current freeze on funded slots should be eliminated and the Council should establish criteria that define eligibility, both for the establishment of new slots and—eventually—for continued funding of existing slots. These criteria might specify specialties or subspecialties, certain geographic locations, or types of training sites. All sponsoring organizations should be able to compete for funded slots. Ultimately, continued funding should be granted only to training programs that meet specified performance objectives.

Performance-Based Payment

Effective implementation of a value-driven, performance-based financing system will require a coherent, integrated measurement system that is purposeful and efficient (IOM, 2006b).

Few ready-to-use performance metrics could be used for GME payment purposes. The objective of the measures should not be to interfere with accreditation processes. The focus should be on outcomes related to physicians' preparation for practice in a high-quality, continually improving health care system. Developing and piloting of possible measures should be a high priority for both the GME Policy Council and CMS GME Center. The process should be objective and evidence based. This report identified a variety of outcomes that could be targeted and tracked longitudinally. These outcomes include

- Competence in care coordination, team-based care, culturally competent care, cost-effective care, and quality improvement;
- Key clinical competencies (e.g., management of common chronic conditions, ability to perform common office-based procedures) as relevant to certain specialties;
- Increased numbers of physicians in the specialties and geographic locations where they are needed;
- Expanded training in community-based settings (e.g., ambulatory care offices and clinics, long-term care facilities, and patient-centered medical homes);
- Increase in GME graduates choosing to practice in rural clinical settings and underserved urban areas; and
- Greater racial, ethnic, and economic diversity of physician trainees.

As MedPAC has recommended, the GME Policy Council should consult with a range of organizations as it develops its criteria for evaluating performance, including ACGME, AOA, specialty boards, training pro-

grams, health care providers, payers, and patient and consumer groups (MedPAC, 2010).

Financial Impact

Because many important details of the payment reforms are yet to be determined, a detailed impact analysis is not feasible. However, the committee assessed the likely financial impact based on the broad outline of its recommended Medicare payment reforms, that is, funding GME at current levels (adjusted for inflation), one national PRA assuming the current number of funded training slots, and the changing allocation of funds to the operational and transformation funds. These impacts are described below (Appendix F provides additional analyses).

- The reforms will redistribute funds in several ways, and some of the redistributions may work in opposite directions (see Table F-3 in Appendix F).
- The hospital-specific impact of the new, uniform PRA will be influenced by: (1) whether the hospital's current DGME PRA is above or below the national average, and (2) whether the hospital's Medicare share is above or below the national average.
- The impact of transitioning away from current IME payments will depend on a complex set of factors, including the hospitals' Medicare case mix, teaching intensity (ratio of residents to beds) relative to number of residents, and number of Medicare discharges.
- The largest redistribution relates to the delinking of GME payments from the hospital's Medicare caseload. Residents in hospitals with a relatively large number of Medicare discharges or high Medicare share will have reduced GME funding relative to hospitals with a smaller number of Medicare discharges or Medicare share. Phasing out the IME adjustment will benefit larger teaching programs that have lower resident-to-bed ratios because the ratios are a factor in IME adjustment calculation. Many of these are safety net hospitals, which tend to have relatively smaller Medicare patient caseloads; on average, these institutions are likely to receive a greater share of GME funding than under current rules.

Medicaid GME

RECOMMENDATION 5: Medicaid graduate medical education (GME) funding should remain at the state's discretion. However, Congress should mandate the same level of transparency and accountability

in Medicaid GME as it will require under the changes in Medicare GME herein proposed.

Information on Medicaid GME programs is scarce, and on Medicaid funds flow, it is especially opaque. The committee was not able to conduct an in-depth assessment of Medicaid GME. Nevertheless, given that it is a multibillion-dollar public investment ($3.9 billion in 2012), the public has the right to expect basic transparency and accountability in Medicaid GME funding. As Chapter 3 describes, there is little evidence that states use Medicaid GME funds to achieve policy objectives (despite concerns about physician shortages) (Henderson, 2013; Spero et al., 2013). In a series of recent interviews with Medicaid officials in 14 states, Spero and colleagues (2013) found that teaching hospitals were free to choose how to use Medicaid GME funds, and few states coordinate GME decisions regarding the number, location, or specialty of new residency positions. The committee suggests that the GME Policy Council consider the extent to which it might advise the CMS Center for Medicaid and CHIP Services[4] and the state Medicaid programs on introducing transparency in their GME programs.

SUMMARY

In conclusion, continued Medicare support of GME should be contingent on its demonstrated value and contribution to the nation's health needs. Under the current terms of GME financing, there is a striking absence of transparency and accountability for producing the types of physicians that today's health care system requires. The committee recognizes that reforming GME and its governance and financing cannot—on its own—produce a high-value, high-performance health care system. However, appropriate preparation of the physician workforce is an essential component of this transformation. The recommendations presented in this chapter provide a roadmap to this end.

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[4] See http://www.cms.gov/About-CMS/Agency-Information/CMSLeadership/Office_CMCSC.html (accessed April 28, 2014) for more information on the Center for Medicaid and CHIP Services. CHIP is the Children's Health Insurance Program.

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Appendix A

Abbreviations and Acronyms

AACOM	American Association of Colleges of Osteopathic Medicine
AACOMAS	AACOM Application Service
AAHC	Association of Academic Health Centers
AAMC	Association of American Medical Colleges
ABA	American Board of Anesthesiology
ABEM	American Board of Emergency Medicine
ABIM	American Board of Internal Medicine
ABMS	American Board of Medical Specialties
ABP	American Board of Pediatrics
ABPN	American Board of Psychiatry & Neurology
ABR	American Board of Radiology
ABS	American Board of Surgery
ACA	Patient Protection and Affordable Care Act
ACCME	Accreditation Council for Continuing Medical Education
ACGME	Accreditation Council for Graduate Medical Education
AHA	American Hospital Association
AHME	Association for Hospital Medical Education
AMA	American Medical Association
AOA	American Osteopathic Association
AODME	Association of Osteopathic Directors and Medical Educators
APRN	advanced practice registered nurse
BBA	Balanced Budget Act
BCRS	Bureau of Clinician Recruitment and Service

BOH	Bureau of Hospitals (AOA)
BOME	Bureau of Osteopathic Medical Educators
BOS	Bureau of Osteopathic Specialists
CHGME	Children's Hospital Graduate Medical Education
CME	Council on Continuing Medical Education (AOA)
CMMI	Center for Medicare & Medicaid Innovation
CMS	Centers for Medicare & Medicaid Services
CMSS	Council of Medical Specialty Societies
COBRA	Consolidated Omnibus Budget Reconciliation Act
COCA	Commission on Osteopathic College Accreditation
COGME	Council on Graduate Medical Education
COM	College of Osteopathic Medicine
COPT	Council on Osteopathic Postgraduate Training
COPTI	Council on Osteopathic Postgraduate Training Institutions
CPI-U	Consumer Price Index-All Urban
DGME	direct graduate medical education (payments that Medicare makes for the direct costs of GME)
D.O.	Doctor of Osteopathy
DoD	Department of Defense
DRG	diagnosis-related group
DSH	Disproportionate Share Hospital payments
ECFMG	Educational Commission for Foreign Medical Graduates
EMR	electronic medical record
FFS	fee-for-service
FSMB	Federation of State Medical Boards
FTE	full-time equivalent
FY	fiscal year
GAF	geographic adjustment factor
GAO	Government Accountability Office
GME	graduate medical education
HHS	U.S. Department of Health and Human Services
HIT	health information technology
HRSA	Health Resources and Services Administration

IM	internal medicine
IME	indirect medical education (payments that Medicare pays for higher patient care costs associated with teaching activities)
IMG	international medical graduate
IOM	Institute of Medicine
IRB	intern and resident-to-bed ratio used in the Medicare payment formula for IME
LCME	Liaison Committee for Medical Education
M.D.	Medical Doctor (allopathic)
MedPAC	Medicare Payment Advisory Commission
MMA	Medicare Prescription Drug, Improvement, and Modernization Act
MSA	Metropolitan Statistical Area
NBME	National Board of Medical Examiners
NBOME	National Board of Osteopathic Medical Examiners
NHSC	National Health Service Corps
NIH	National Institutes of Health
NMA	National Medical Association
NP	nurse practitioner
NRMP	National Resident Matching Program
OBRA	Omnibus Budget Reconciliation Act
OPTI	Osteopathic Postdoctoral Training Institution
PA	physician assistant
PCMH	patient-centered medical home
PGY	postgraduate year of residency training
PPS	Prospective Payment System
PRA	per-resident amount (Medicare's DGME payments are based on its share of the PRA)
RRC	Residency Review Committee for a given specialty/subspecialty that establishes program-specific accreditation requirements
SCHIP	State Children's Health Insurance Program

THC	Teaching Health Center
VA	U.S. Department of Veterans Affairs
VERA	Veterans Equitable Resource Allocation
VHA	Veterans Health Administration
VISN	Veterans Integrated Service Network

Appendix B

U.S. Senate Letters

United States Senate
WASHINGTON, DC 20510

December 21, 2011

Harvey Fineberg, MD, PhD
President
Institute of Medicine
500 Fifth Street, NW
Washington, DC 20001

Dear Dr. Fineberg:

We are writing to encourage the Institute of Medicine (IOM) to conduct an independent review of the governance and financing of our system of graduate medical education (GME). The IOM's influential 2001 report *Crossing the Quality Chasm: A New Health System for the 21st Century* recommended a summit to discuss reforming health professions education, which was held in 2002 and attended by 150 important organizations. Earlier, the IOM had convened a public hearing in 1997 to solicit views on GME from various stakeholders, including physician, nursing, hospital and medical college professional associations.

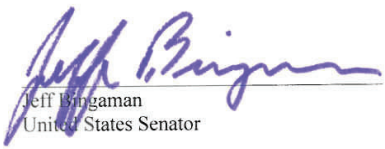
Much has happened since these events. We believe our GME system is under increasing stress, and the projections for our health care workforce are of significant concern. There is growing concern that the United States is failing to adequately match medical training with our medical needs on a national level. Changes to GME are being discussed by Congress, the Medicare Payment Advisory Commission, Accreditation Council for Graduate Medical Education, and various foundations, such as the Josiah Jr. Macy Foundation. It is time to redesign health care workforce education and training in a manner that improves access to and delivery of health care services and enables the future generation of health care professionals to actively participate in creating high quality, lower cost health care.

Specifically, we are interested in an analysis of the governance and financing of GME and potential GME reforms. Some areas deserving of particular attention are: accreditation; reimbursement policy; using GME to better predict and assure adequate workforce supply by type of provider, specialty, and demographic mix; distribution of physicians; the role of GME in the current care of the underserved; the impact of changes in GME on access to health care; and use of GME to assure a future workforce possessing the skill set to effectively address current and future health care needs. In addition, we are particularly interested in IOM's observations about the uneven distribution of GME funding across states based on need and capacity, and how to address this inequity.

We urge the IOM to move forward immediately with additional public and private sponsors to empanel a consensus committee to develop recommendations to meet the challenges

facing GME. We would hope to have recommendations from the IOM regarding suggested statutory, regulatory and accreditation changes by the third quarter of 2012. Thank you for your attention to this matter.

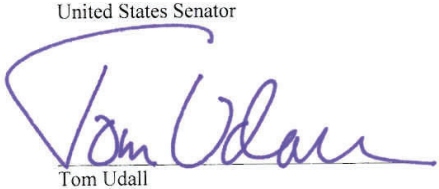
Sincerely,



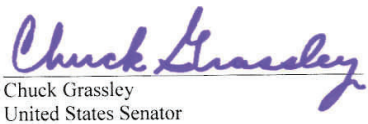
Jeff Bingaman
United States Senator

Mark Udall
United States Senator

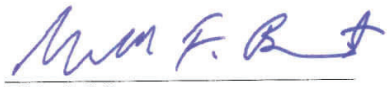
Jon Kyl
United States Senator



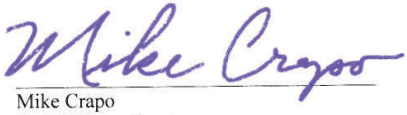
Tom Udall
United States Senator



Chuck Grassley
United States Senator



Michael F. Bennet
United States Senator



Mike Crapo
United States Senator

United States Senate
WASHINGTON, DC 20510

June 20, 2012

Dear Dr. Fineberg:

As the Institute of Medicine (IOM) prepares for its study of graduate medical education (GME) and the U.S. health workforce, we write to urge you to examine all of the federal programs that help educate and train our health care workforce.

Last year you heard from some of our Senate colleagues explaining that our GME system is under increasing stress and expressing concern that the policy discussion of GME is not always grounded in facts and data. That is why we welcome the IOM's study – GME is too important to our nation's health system to change without a comprehensive examination.

As the IOM investigates options that better align GME and physician and other health provider supply with the nation's future health care needs, we strongly urge you to review a broad range of health workforce education and training programs, not just those funded through Medicare. Indeed, MedPAC in its June 2010 Report to Congress said, "Federal programs other than Medicare could also contribute to improving the output of the GME system as well as to the development of other important health professionals."

For example, the Health Resources and Services Administration (HRSA) has a number of programs designed to develop the health care workforce and promote access to primary care, including: Children's Graduate Medical Education (CHGME) program, Titles VII Health Professions programs, Title VIII Nursing Education programs, the new Teaching Health Center (THC) Program. In the same vein, we ask that the IOM review the current definition of Health Professional Shortage Areas (HPSAs) and Medically Underserved Areas (MUAs) and determine if those designations could be more comprehensive or assist in questions of workforce distribution.

Second, we ask that the IOM conduct a comprehensive examination of how GME relates to ultimate physician practice location and physician mal-distribution. We believe that it is important to look beyond the number of training positions in each state to understand and address the factors influencing a physician's practice location. A recent analysis of physician workforce data appears to indicate that, in fact, the distribution of GME positions across the nation may actually have little or no impact on the geographic distribution of physicians. Medicaid reimbursement levels, employment opportunities for spouses and cost of living may be driving a physician's decision about where to practice.

In addition, over the years, we have all supported efforts to increase the number of GME medical residency slots. We hope that the IOM will also examine the statutory cap on these slots.

Finally, we believe it is also critical to examine the impact of Medicaid GME funding reductions in recent years on health care workforce education and training.

Thank you for your consideration of this request.

Sincerely,

Charles E. Schumer

John Kerry

Jack Reed

Bill Nelson

Appendix C

Public Workshop Agendas

Institute of Medicine
Committee on the Governance and Financing of Graduate Medical Education

PUBLIC MEETING AGENDA

September 4, 2012
Keck Center of the National Academies
500 Fifth Street, NW, Room 100
Washington, DC

PUBLIC SESSION 1:00-5:00 pm

1:00 **Welcome and Introductory Remarks, Gail Wilensky, Co-Chair and Moderator**

1:05 **HHS Role in Financing GME**

- **Medicare Program —** *Marc Hartstein, Acting Director, Hospital and Ambulatory Policy Group*, Center for Medicare

Q & A/Discussion

1:45 **Medicaid Program —** *Dianne Heffron (by phone), Director, Financial Management Group*, Center for Medicaid and CHIP Services
Q & A/Discussion

2:15 **HRSA —** *Mary Wakefield, Administrator,* Health Resources and Services Administration
Q & A/Discussion

2:45 **Congressional Perspective**

- *Sandra Wilkniss, Senior Legislative Counsel for Health Care,* Senator Bingaman
- *Dan Elling, Majority Staff Director,* House Ways and Means Subcommittee on Health
- *Karen Fisher, Professional Staff,* Senate Finance Committee
- *Cybele Bjorklund, Minority Staff Director,* House Ways and Means Subcommittee on Health
- *Nick Bath, Senior Policy Advisor for Health,* Senate Health, Education, Labor, and Pensions Committee
- *Anne Morris Reid, Senior Professional Staff Member*, House Energy and Commerce Subcommittee on Health
- *Meghan Taira, Legislative Assistant*, Senator Schumer
- *Fern Goodhart, Health/Education Legislative Assistant*, Senator Tom Udall

Q & A/Discussion

3:45 **Break**

4:00 **Department of Veterans Affairs**

- *Robert (Randy) Petzel, Under Secretary for Health,* U.S. Department of Veterans Affairs
- *Malcolm Cox, Chief Academic Affiliations Officer,* Veterans Health Administration

Q & A/Discussion

4:30 **Department of Defense**

- Eric Schoomaker, *GEN (Ret), former Army Surgeon General, Scholar in Residence,* Uniformed Services University of the Health Sciences

Q & A/Discussion

5:00 **Adjourn**

Institute of Medicine
Committee on the Governance and Financing of Graduate Medical Education

PUBLIC MEETING AGENDA

December 19-20, 2012
National Academy of Science
2101 Constitution Avenue, NW, Auditorium
Washington, DC

PUBLIC SESSION - Day 1: December 19, 2012

12:45 **Welcome and Introductory Remarks, Gail Wilensky, Co-Chair and Moderator**

12:50 **Panel 1: Examples of National and Regional Workforce Planning (Gail Wilensky, moderator)**

- *David Reines, Vice-Chair,* COGME; Clerkship Director of Surgery, VCU School of Medicine Inova Campus
- *David Squire, former Executive Director,* Utah Medical Education Council
- *Benjamin K. Chu (by videoconference), Group President,* Kaiser Permanente Southern California and Hawaii

Q & A/Discussion

1:50 **Panel 2: Determining Sufficiency of the Workforce (Peter Buerhaus, moderator)**

- *Atul Grover, Chief Public Policy Officer,* Association of American Medical Colleges
- *Tom Ricketts, Deputy Director,* Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill
- *Tim Garson, Jr., Director,* Institute for Health Policy, University Professor and Professor of Public Health Sciences at the University of Virginia
- *David Goodman, Director,* Center for Health Policy Research, Dartmouth Institute for Health Policy and Clinical Practice

Q & A/Discussion

2:50 **Panel 3: Challenges in Developing Community-Based Training (Denice Cora-Bramble, moderator)**

- *Roland Goertz, CEO,* Heart of Texas Community Health Center, Inc., Vice-Chair, Educational Health Center Task Force, National Association of Community Health Centers
- *Linda Thomas-Hemak, President and CEO,* The Wright Center for Graduate Medical Education
- *Judy Pauwels, Associate Professor,* University of Washington Department of Family Medicine

Q & A/Discussion

3:45 **Panel 4: Trainee Perspectives (Brian Alexander, moderator)**

- *Manisha Sharma, PGY-3,* Family Medicine, Montefiore Medical Center
- *John Ingle, Fellow,* Department of Otolaryngology, University of Pittsburgh Medical Center, and President, Committee of Interns and Residents
- *Tiffany Groover, National Health Service Corps Scholar,* PGY-3, Internal Medicine, Boston Medical Center
- *Heidi Schumacher, PGY-3,* Pediatrics, Children's National Medical Center
- *Raul Mirza, PGY-4,* Walter Reed Army Institute of Research Sequential Preventive Medicine and Occupational & Environmental Medicine residency
- *Jonathan Amiel, Assistant Dean for Curricular Affairs,* Columbia University College of Physicians & Surgeons; Attending Psychiatrist, New York State Psychiatric Institute's Washington Heights Community Service

Q & A/Discussion

4:30 **Additional Perspectives (Roger Plummer, moderator)**

- *Richard Pan,* American Academy of Pediatrics
- *Ralph G. Dacey, Jr., President,* Society of Neurological Surgeons
- *Christopher Gonzalez, Vice Chair of Health Policy,* American Urological Association
- *David Hoyt, Executive Director,* American College of Surgeons

Q & A/Discussion

5:05
- *Karl Auerbach, President,* American College of Occupational and Environmental Medicine
- *Lisa Bellini, Vice Chair for Education,* Department of Medicine, Perelman School of Medicine at the University of Pennsylvania; Chair of the Board, Alliance for Academic Internal Medicine
- *James Pacala, President,* American Geriatrics Society
- *Charles Cutler, Chair-elect,* Board of Regents, American College of Physicians
- *Susan E. Skochelak, Vice President,* Medical Education, American Medical Association

Q & A/Discussion

5:40
- *Kristi Guillory, Senior Policy Analyst,* American Cancer Society Cancer Action Network
- *Steven A. Wartman, President and CEO,* Association of Academic Health Centers
- *Arnold R. Eiser, Vice President,* Medical Education, Mercy Health System SEPA; Professor of Medicine and Associate Dean, Drexel University College of Medicine
- *Tim Johnson, Senior Vice President and Executive Director of Finance and Graduate Medical Education,* Greater New York Hospital Association (GNYHA)

Q & A/Discussion

6:05 **Adjourn**

PUBLIC SESSION - Day 2: December 20, 2012

8:45 **Welcome and Introductory Remarks, Don Berwick, Co-Chair and Moderator**

8:50 **Panel 1: Ensuring Innovation in Health Care and Medical Education (Don Berwick, moderator)**
- *Paul Batalden, Professor Emeritus of Pediatrics,* Community and Family Medicine, Dartmouth Institute for Health Policy and Clinical Practice, Dartmouth College Geisel School of Medicine
- *George Thibault, President,* Josiah Macy Jr. Foundation

Q & A/Discussion

9:40 **Panel 2: Ensuring Accountability (Deborah Powell, moderator)**

- *Tom Nasca, Executive Director and CEO,* Accreditation Council for Graduate Medical Education
- *Boyd Buser, Vice President for Health Affairs and Dean,* University of Pikeville-Kentucky College of Osteopathic Medicine, Co-chair The Blue Ribbon Commission for the Advancement of Osteopathic Medical Education
- *Nick Busing, President and CEO,* Association of Faculties of Medicine of Canada
- *Frank Lewis, Executive Director,* American Board of Surgery

Q & A/Discussion

10:55 **Panel 3: Understanding the Costs and Financing of GME (Amitabh Chandra, moderator)**

- *Boyd Buser, Vice President for Health Affairs and Dean,* University of Pikeville-Kentucky College of Osteopathic Medicine
- *Marc Boom, President and CEO,* Methodist Hospital System
- *Steven M. Safyer, President and CEO,* Montefiore
- *Jim Kaufman, Vice President of Public Policy,* Children's Hospital Association
- *Lewis Sandy, Senior Vice President* for Clinical Advancement, UnitedHealth Group

Q & A/Discussion

12:05pm **Adjourn**

Appendix D

Committee Member Biographies

Donald M. Berwick, M.D., M.P.P., FRCP (*Co-chair*), is the former President and CEO of the Institute for Healthcare Improvement (IHI), an organization that Dr. Berwick co-founded and led for more than 20 years. He is one of the nation's leading authorities on health care quality and improvement. In July, 2010, President Obama appointed Dr. Berwick to the position of Administrator of the Centers for Medicare & Medicaid Services (CMS), a position he held until December, 2011. A pediatrician by background, Dr. Berwick has served as Clinical Professor of Pediatrics and Health Care Policy at the Harvard Medical School, Professor of Health Policy and Management at the Harvard School of Public Health, and as a member of the staffs of Boston's Children's Hospital Medical Center, Massachusetts General Hospital, and the Brigham and Women's Hospital. He has also served as vice chair of the U.S. Preventive Services Task Force, the first independent member of the Board of Trustees of the American Hospital Association, and chair of the National Advisory Council of the Agency for Healthcare Research and Quality. An elected member of the Institute of Medicine (IOM), Dr. Berwick served two terms on the IOM's governing council and was a member of the IOM's Global Health Board. He served on President Clinton's Advisory Commission on Consumer Protection and Quality in the Healthcare Industry.

He is a recipient of numerous awards, including the 1999 Joint Commission's Ernest Amory Codman Award, the 2002 American Hospital Association's Award of Honor, the 2006 John M. Eisenberg Patient Safety and Quality Award for Individual Achievement from the National Quality Forum and the Joint Commission on Accreditation of Healthcare Organiza-

tions, the 2007 William B. Graham Prize for Health Services Research, and the 2007 Heinz Award for Public Policy from the Heinz Family Foundation. In 2005, he was appointed "Honorary Knight Commander of the British Empire" by the Queen of England, the highest honor awarded by the UK to non-British subjects, in recognition of his work with the British National Health Service. Dr. Berwick is the author or co-author of more than 160 scientific articles and four books. Dr. Berwick recently became a lecturer in the Department of Health Care Policy at the Harvard Medical School.

Gail R. Wilensky, Ph.D. (*Co-chair*)**,** is an economist and a senior fellow at Project HOPE, an international health foundation. Her focus has been on strategies to reform health care, with particular emphasis in recent years on Medicare, comparative effectiveness research and military health care. Dr. Wilensky serves as a trustee of the Combined Benefits Fund of the United Mine Workers of America and the National Opinion Research Center, is on the Board of Regents of the Uniformed Services University of the Health Sciences, and the Board of Directors of the Geisinger Health System Foundation and the Visiting Committee of the Harvard Medical School. She recently served as president of the Defense Health Board, a federal advisory board to the Secretary of Defense, was a commissioner on the World Health Organization's Commission on the Social Determinants of Health, and co-chaired the Department of Defense Task Force on the Future of Military Health Care.

She was the Administrator of the Health Care Financing Administration (now called CMS), 1990-1992, and Deputy Assistant for Policy Development to President George H. W. Bush in 1992.

She chaired the Physician Payment Review Commission, 1995-1997, and MedPAC, 1997-2001. She is an elected member of the Institute of Medicine and has served two terms on its governing council. She is a former chair of the board of directors of Academy Health, a former trustee of the American Heart Association, and a current or former director of numerous other non-profit organizations (e.g., National Alliance for Hispanic Health, University of the Sciences, Philadelphia). She is also a director of United-Health Group and Quest Diagnostics. Dr. Wilensky testifies frequently before congressional committees, serves as an advisor to members of Congress and other elected officials, and speaks nationally and internationally. She received a bachelor's degree in psychology and a Ph.D. in economics from the University of Michigan and has received several honorary degrees.

Brian Alexander, M.D., M.P.H., is a radiation oncologist specializing in research and clinical care for patients with tumors of the central nervous system and is the Director of the Neuro-radiation Oncology Program at the Dana-Farber Brigham and Women's Cancer Center, Harvard Medical

School. He also served as the Fellowship Director for the Department of Radiation Oncology at Brigham and Women's Hospital. His research interests include the characterization of the radiation responsiveness of glioma stem cells, preclinical evaluation of novel therapeutics, and innovative designs for early phase clinical trials.

Dr. Alexander previously served as a White House Fellow and Special Assistant to the Secretary of Veterans Affairs (VA) from 2008 to 2009. Under Secretary Peake, he helped prepare the VA for the transition of administrations and worked to develop a public reporting system for quality performance indicators that would become VA ASPIRE. During the transition and the early part of the Obama administration, Dr. Alexander served as a health policy advisor to Secretary Shinseki. In that role, he led the Department's effort to organize the International Roundtable on Clinical Quality and Patient Safety and coordinated all aspects of Secretary Shinskei's preparation for the Obama Administration's Health Care Summit. In addition to his role as health policy advisor, Dr. Alexander organized the startup of the VA's Coordinating Council on National Health Reform and directed the activities of its multi-team Health Reform Working Group.

Dr. Alexander is originally from Southfield, Michigan, and is a graduate of Kalamazoo College, the University of Michigan Medical School, and the Harvard School of Public Health.

David A. Asch, M.D., M.B.A., is Executive Director of the Penn Medicine Center for Health Care Innovation. He is Professor of Medicine at the Perelman School of Medicine and Professor of Health Care Management and Professor of Operations and Information Management at the Wharton School, at the University of Pennsylvania.

He teaches health policy at the Wharton School, and he practices internal medicine at the Philadelphia Veterans Affairs Medical Center, where he created and from 2001 to 2012 directed the Center for Health Equity Research and Promotion—the Department of Veterans Affairs' national center to support vulnerable populations and reduce racial disparities. He directs the Robert Wood Johnson Foundation Health & Society Scholars Program and the Robert Wood Johnson Foundation Clinical Scholars Program at the University of Pennsylvania. From 1998 to 2012 he was Executive Director of the Leonard Davis Institute of Health Economics.

David Asprey, Ph.D., PA-C, currently serves as Assistant Dean in the Office of Student Affairs and Curriculum in the Carver College of Medicine. In addition, he is Professor and Chair of the Department of Physician Assistant Studies and Services. He holds secondary appointments in the department of Pediatrics and in the Department of Physical Therapy and Rehabilitative Sciences. His academic background includes a bachelor's degree in biology

from Bethel College in St. Paul, Minnesota, and a bachelor's degree from the University of Iowa Physician Assistant Program. He received a master's degree in instructional design and technology and a Ph.D. in higher education from the University of Iowa College of Education. His clinical practice as a PA has consisted of 4 years in emergency medicine and 21 years in pediatric cardiology at the University of Iowa Hospitals and Clinics.

Dr. Asprey has authored numerous abstracts, articles, and chapters in addition to co-editing three textbooks. He has served on the board of the Physician Assistant Education Association, including a term as president, and was appointed to the Federal Advisory Committee on Training in Primary Care Medicine and Dentistry, where he also served as the vice chair. He is the recipient of several awards, including Iowa Physician Assistant Society's PA of the Year Award, Carver College of Medicine's Collegiate Teaching Award, the Ben Pardini Interdisciplinary Teaching Award, and the Physician Assistant Education Association's Master Faculty Award.

Alfred O. Berg, M.D., received his professional education at Washington University, the University of Missouri, and the University of Washington and completed residencies in family medicine and in general preventive medicine and public health. He has served on many national panels using evidence-based methods to guide practice and policy, including chairmanship of the U.S. Preventive Services Task Force, chair of the Centers for Disease Control and Prevention panel on Evaluation of Genomic Applications in Practice and Prevention, and chair of the National Institutes of Health State-of-the-Science Conference on Family History. Dr. Berg was elected to the Institute of Medicine in 1996 and has served on 7 committees for the National Academies, chairing 3, and contributing to 13 reports. He currently serves on the Methodology Committee of the Patient-Centered Outcomes Research Institute, established under the Patient Protection and Affordable Care Act.

Peter Buerhaus, Ph.D., R.N., FAAN, is a nurse and a health care economist, serving as the Valere Potter Distinguished Professor of Nursing at Vanderbilt University School of Nursing, and Director of the Center for Interdisciplinary Health Workforce Studies, the Institute for Medicine and Public Health, at Vanderbilt University Medical Center. From 2000 to 2006, Dr. Buerhaus was the Senior Associate Dean for Research at Vanderbilt University School of Nursing. Before that, he was assistant professor of health policy and management at Harvard School of Public Health (1992-2000) where he developed the Harvard Nursing Research Institute and its postdoctoral program. Earlier he served as assistant to the CEO of the University of Michigan Medical Center's seven teaching hospitals (1983-1986) and assistant to the Vice Provost for Medical Affairs, the chief executive of the medical center (1987-1990).

Dr. Buerhaus maintains an active research program involving studies on the economics of the nursing workforce, nurse and physician workforce forecasting, developing and testing measures of hospital quality of care, determining public and provider opinions on issues involving the delivery of health care, and assessing the adequacy of the primary care workforce. Dr. Buerhaus is co-author of the 2008 book *The Future of the Nursing Workforce in the United States: Data, Trends, and Implications*.

In 2003, Dr. Buerhaus was elected into the National Academies' Institute of Medicine and since 1994 has been a member of the American Academy of Nursing. He served on the Advisory Council of the National Institutes of Health National Institute of Nursing Research (2001-2006), National Quality Forum Steering Committee on Nursing Quality Performance Measures (2004-2005), as a director on the board of Sigma Theta Tau International (2001-2005), and as a member of the Joint Commission's Nursing Advisory Committee (2003-2010). He serves as an expert advisor for the Bipartisan Policy Center's health care workforce initiative. On September 30, 2010, Dr. Buerhaus was appointed to Chair of the National Health Care Workforce Commission.

Dr. Buerhaus earned his baccalaureate degree in nursing from Mankato State University (1976), a master's degree in nursing health services administration from The University of Michigan (1981), and a doctoral degree from Wayne State University (1990) and completed a Robert Wood Johnson Foundation postdoctoral faculty fellowship in health care finance at Johns Hopkins University (1991-1992).

Amitabh Chandra, Ph.D., is a health and labor economist, a professor of public policy, and Director of Health Policy Research at the Harvard University Kennedy School of Government. He serves on the Congressional Budget Office's panel of health advisors. In 2011 he served as Massachusetts' Special Commissioner on Provider Price Reform. He is a Research Associate at the National Bureau of Economic Research and an elected member of the IOM.

His research has been supported by the National Institute of Aging, the National Institute of Child Health and Development, and the Robert Wood Johnson Foundation and has been published in the *American Economic Review*, the *Journal of Political Economy*, the *New England Journal of Medicine*, and *Health Affairs*. He is the recipient of an Outstanding Teacher Award, the first-prize recipient of the Upjohn Institute's Dissertation Award, the Kenneth Arrow Award for best paper in health economics, and the Eugene Garfield Award for the impact of medical research. In 2012, he was awarded the American Society of Health Economists medal.

Denice Cora-Bramble, M.D., M.B.A., is the Chief Medical Officer & Executive Vice President of Ambulatory and Community Health Services at Children's National Health System in the District of Columbia. In this role she leads all regional ambulatory clinical operations, including eight pediatric subspecialty regional outpatient centers, two emergency departments, seven general pediatrics health centers, nine pediatric practices, seven school-based health centers, and three mobile medical units. Dr. Cora-Bramble has direct responsibility for more than 1,000 physicians, nurses, and administrative staff members and oversees a budget of approximately $113 million. She directs the physician business enterprise at Children's National focused on quality outcomes, operational efficiency, patient satisfaction, access to timely services, fiscal responsibility, and shared accountability.

Dr. Cora-Bramble completed her medical and pediatric residency training at Howard University and earned her master's in business administration with a concentration in medical services management from Johns Hopkins University. She is a professor of pediatrics at George Washington University School of Medicine and a diplomate of the American Board of Pediatrics. She is the recipient of the 2009 Distinguished Alumnus Award from Johns Hopkins University and the 2009 Health Care Delivery Award from the Academic Pediatric Association. In 2007 she received the highest national honor in community pediatric education, the Academic Pediatric Association and American Academy of Pediatrics' National Pediatric Community Teaching Award. Her work in community pediatrics has been featured in *Contemporary Pediatrics*.

Michael J. Dowling, M.S.W., is President and Chief Executive Officer of the North Shore–Long Island Jewish (LIJ) Health System. It is the largest integrated health care system in New York State, with total revenue of almost $7 billion and a workforce of 48,000. It consists of 16 hospitals, 17 long-term care facilities, 3 trauma centers, 5 home health agencies, and hundreds of outpatient and ambulatory facilities. In 2011, it opened a medical school in partnership with Hofstra University.

Before North Shore LIJ, he was an executive with Empire Blue Cross/Blue Shield. Mr. Dowling served in New York state government for 12 years, including 7 years as State Director of Health, Education and Human Services and Deputy Secretary to the Governor. He was also Commissioner of the New York State Department of Social Services. Prior to his government experience, he was a professor of social policy and Assistant Dean at the Fordham University Graduate School of Social Services. He has been the recipient of numerous awards.

Kathleen A. Dracup, R.N., Ph.D., FAAN, is a professor and dean emeritus of the University of California San Francisco School of Nursing. A

member of the Institute of Medicine, she is a leader in the field of cardiovascular nursing and has been an influential mentor for cardiovascular nurse researchers for the past three decades. She is recognized internationally for her investigation in the care of patients with heart disease and the effects of this disease on spouses and other family members. She has conducted a number of randomized clinical trials testing interventions to reduce the emotional distress experienced by cardiac patients and their family members and to reduce morbidity and mortality from sudden cardiac death. Dr. Dracup has published her research in more than 400 articles and chapters and textbooks.

Anthony (Tony) E. Keck, M.P.H., is the Director of Health and Human Services for Governor Nikki R. Haley of South Carolina. He has more than 24 years of experience in health care management, consulting, policy and academics in the United States and Latin America. Prior to his appointment in South Carolina, Mr. Keck served three years in the administration of Louisiana governor Bobby Jindal as health and social services policy advisor to the governor and chief of staff and deputy secretary of the Louisiana Department of Health & Hospitals. In the private sector, Mr. Keck managed and consulted for organizations such as Johnson & Johnson, where he was Director of Operations for Latin American Consulting and Services, and as Director of Management Engineering at Ochsner Clinic New Orleans, and Administrator of St. Thomas Health Services, a community clinic.

He holds a bachelor's degree in industrial and operations engineering and a master's in Public Health from the University of Michigan. He serves on the Board of the National Association of Medicaid Directors and has an appointment at the Tulane University School of Medicine Department of Family and Community Medicine.

Octavio N. Martinez, Jr., M.D., M.P.H., M.B.A., is the fifth executive director of the Hogg Foundation for Mental Health. He holds an appointment of Associate Vice President within the Division of Diversity and Community Engagement at The University of Texas at Austin. He is a clinical professor with an appointment in the university's School of Social Work and holds an adjunct professor appointment at The University of Texas Health Science Center at San Antonio School of Medicine's Department of Psychiatry. His academic interests include minority health, health disparities, and workforce issues. He currently serves on the Institute of Medicine's Roundtable on the Promotion of Health Equity and the Elimination of Health Disparities and formerly served on the IOM's Committee on the Mental Health Workforce for Geriatric Populations. Dr. Martinez also serves on numerous state and national boards focused on improving the health care system.

Fitzhugh Mullan, M.D., is the Murdock Head Professor of Medicine and Health Policy at the George Washington University School of Public Health and a professor of pediatrics at the George Washington University School of Medicine. His research and policy work focus on U.S. and international health workforce issues. He is the principal investigator of the Medical Education Partnership Initiative Coordinating Center, a PEPFAR/NIH/HRSA-funded, 12-country African medical education project. He previously served as principal investigator of the Gates-funded Sub-Saharan African Medical School Study. His U.S. work includes the Kellogg Foundation–funded Beyond Flexner Study and the Medical Education Futures Study. He is an appointed commissioner of the National Health Care Workforce Commission.

Dr. Mullan graduated from Harvard University with a degree in history and from the University of Chicago Medical School. He trained in pediatrics and was commissioned in the United States Public Health Service, where he worked in New Mexico as one of the first members of the National Health Service Corps. During 23 years in the Public Health Service, he served in many capacities, including director of the National Health Service Corps, director of the Bureau of Health Professions, Secretary of Health and Environment for the State of New Mexico, and as an Assistant Surgeon General. He was a member of both the President's Task Force on Health Care Reform and the Council on Graduate Medical Education. In 1996, he retired from the Public Health Service.

Dr. Mullan has written widely for both professional and general audiences on medical and health policy topics. His books include *White Coat, Clenched Fist: The Political Education of an American Physician*; *Vital Signs: A Young Doctor's Struggle with Cancer*; *Plagues and Politics: The Story of the United States Public Health Service*; and *Big Doctoring in America: Profiles in Primary Care*. Dr. Mullan is the founding president of the National Coalition for Cancer Survivorship. He is the recipient of the American Cancer Society's 1988 Courage award, the Society for Surgical Oncology's 1989 James Ewing medal, as well as the Surgeon General's Medallion, and the U.S. Public Health Service's Distinguished Service Medal. He is a member of the Institute of Medicine.

Roger Plummer, B.S., is a retired executive-level consultant of an international telecommunications technology organization (for 17 years) following a successful 30-year career with the Bell System and Ameritech (created by AT&T's divestiture) where he retired as president and CEO of Ameritech's Custom Business Unit. Among the Custom Unit's initiatives was implementation of a software-based regional health care information network, and much of Mr. Plummer's support of non-profit entities includes involvement in health care. He served (or serves) on the governing boards

of Ravenswood Hospital (Chicago); the University of Illinois, where he had trustee oversight of its hospital and college of medicine; the Accreditation Council for Graduate Medical Education (ACGME) as a public member; and the National Headache Foundation. He is founding chairman of the Advisory Board of Rush University Medical Center Neurobehavioral Center.

Deborah E. Powell, M.D., is dean emeritus of the medical school and professor in the Department of Laboratory Medicine and Pathology at the University of Minnesota. She joined Minnesota in 2002 and led the University of Minnesota Medical School until 2009. She was also Assistant Vice President for Clinical Sciences, Associate Vice President for New Models of Education, and McKnight Presidential Leadership Chairman at University of Minnesota, Twin Cities.

Prior to coming to Minnesota, she served as an executive dean and Vice Chancellor for Clinical Affairs at the University of Kansas School of Medicine for 5 years. Previously, she served as Chairman of the Department of Pathology and Laboratory Medicine and as Vice Chairman and Director of Diagnostic Pathology at the University of Kentucky in Lexington. She is a medical educator and has more than 30 years of experience in academic medicine.

Additionally, she has been the president of the United States and Canadian Academy of Pathology and the president of the American Board of Pathology. She served as the chairman of the Council of Deans of the Association of American Medical Colleges and as chair of the Association of American Medical Colleges in 2009-2010. She has served as a director of the ACGME, the Institute for Healthcare Improvement, Fairview Health System, the University of Minnesota Medical Center, Association of American Medical Colleges and Hazelden. She is a member of the Institute of Medicine of the National Academy of Sciences. Dr. Powell is a board-certified surgical pathologist. She received her medical degree from the Tufts University School of Medicine.

Barbara Ross-Lee, D.O., M.A., FACOFP, Vice President for Health Sciences and Medical Affairs, is responsible for the New York Institute of Technology (NYIT) New York College of Osteopathic Medicine; NYIT School of Health Professions; NYIT Academic Health Clinics; The Center for Global Health; The Center for Geriatrics and Gerontology; The Center for the Future of the Health Care Work Force, and The National Institute for Health Policy.

Dr. Ross-Lee is the first African-American female to serve as dean of a U.S. medical school and the first osteopathic physician to participate in the Robert Wood Johnson Foundation Health Policy Fellowship program.

She has extensive background in health policy issues and has served as an advisor on primary care, medical and health professional education, minority health, women's health, and rural health care issues on the federal and state levels.

Dr. Ross-Lee is the past president of the board of directors of the Association of Academic Health Centers and the past chair of the American Association of Colleges of Osteopathic Medicine Board of Governors. She served as chair of the American Osteopathic Association (AOA) Council on Pre-doctoral Education, which was responsible for osteopathic college accreditation, and as member of the AOA Bureau of Professional Education, which was responsible for the accreditation of osteopathic graduate medical education and continuing medical education. She is the past chair of the AOA's Minority Health Initiative and past member of the National Institutes of Health (NIH) Advisory Committee on Research on Women's Health and the NIH Advisory Committee on Rural Health.

Glenn D. Steele, Jr., M.D., Ph.D., is President and CEO of Geisinger Health System, an integrated health services organization in central and northeastern Pennsylvania nationally recognized for its innovative use of the electronic health record and the development and implementation of innovative care models. Dr. Steele previously served as the dean of the Biological Sciences Division and the Pritzker School of Medicine and vice president for medical affairs at the University of Chicago, as well as the Richard T. Crane Professor in the Department of Surgery. Prior to that, he was the William V. McDermott Professor of Surgery at Harvard Medical School, President and CEO of Deaconess Professional Practice Group and Chairman of the Department of Surgery at New England Deaconess Hospital. Dr. Steele is past Chairman of the American Board of Surgery. His investigations have focused on the cell biology of gastrointestinal cancer and pre-cancer and most recently on innovations in healthcare deliv¬ery and financing. A prolific writer, he is the author or co-author of more than 481 scientific and professional articles.

Dr. Steele received his bachelor's degree in history and literature from Harvard University and his medical degree from New York University School of Medicine. He completed his internship and residency in surgery at the University of Colorado, where he was also a fellow of the American Cancer Society. He earned his Ph.D. in microbiology at Lund University in Sweden.

A member of the Institute of Medicine, Dr. Steele serves as a member on the Roundtable on Value and Science-Driven Healthcare and previously served on the Committee on Reviewing Evidence to Identify Highly Effective Clinical Services. A fellow of the American College of Surgeons, Dr. Steele is a member of the American Surgical Association, the American

Society of Clinical Oncology, and past president of the Society of Surgical Oncology.

Dr. Steele also serves on the following boards and national committees: Agency for Integrated Care (AIC) Singapore, Bucknell University Board of Trustees, Cepheid Board of Directors, Congressional Budget Office Panel of Health Advisers, Harvard Medical Faculty Physicians Board at Beth Israel Deaconess Medical Center, Weis Markets Inc., Wellcare Health Plans Inc., xG Health Solutions Board of Directors, Healthcare Innovation Program (HIP) External Advisory Board (Emory University), the Peterson Center on Healthcare Advisory Board, Institute for Healthcare Optimization Advisory Board, Third Rock Ventures Business Advisory Board, the State Health Care Cost Containment Commission, and Healthcare Executives Network. Dr. Steele most recently served as Board Chairman for Premier Inc., former Trustee on the Temple University School of Medicine Board of Visitors. Dr. Steele currently serves as Honorary Chair of the Pennsylvania March of Dimes Prematurity Campaign. He is a former member of the Commonwealth Fund's Commission on a High Perfor¬mance Health System, the National Committee for Quality Assurance's Committee on Performance Measurement, and the American Hospital Association Board of Trustees.

Dr. Steele is the recipient of several awards, including the CEO IT Achievement Award (2006); AHA's Grassroots Champion Award (2007); 8th Annual (2010) AHA Health Research & Education Trust Award and HFMA Board of Directors' Award (2011). He has been named consecutive times to *Modern Healthcare's* 50.

Gail L. Warden, M.A., serves as President Emeritus of Detroit-based Henry Ford Health System and served as its president and chief executive officer from 1988 to 2003. He is professor of health management and policy at the University of Michigan School of Public Health. He is an elected member of the Institute of Medicine. He served on its Board of Health Care Services, Committee on Quality Health Care in America; chaired the Committee on the Future of Emergency Medicine in the United States, the Committee on Planning a Continuing Health Care Professional Education Institute, and the Committee on Patient Safety and Health Information Technology. He served two terms on its Governing Council. He is chairman emeritus of the National Quality Forum, chairman emeritus of the National Committee for Quality Assurance, a past chairman of the American Hospital Association, and the chair emeritus of National Center for Healthcare Leadership. He is an emeritus member of the Robert Wood Johnson Foundation Board of Trustees and serves on the RAND Health Board of Advisors.

Mr. Warden holds the position of Vice Chairman and Trustee for the Rosalind Franklin University of Medicine and Science's Board of Directors, and he chairs the Detroit Wayne County Health Authority and the Detroit

Zoological Society. He is also a director for the National Research Corporation's Board of Directors in Lincoln, Nebraska, and the Picker Institute. He served as a director of Comerica, Inc., from 1990 to 2006.

A graduate of Dartmouth College, Mr. Warden holds a master's degree in hospital administration from the University of Michigan. Mr. Warden received an honorary doctorate in public administration from Central Michigan University and an honorary doctorate of humane health care from Rosalind Franklin University of Medicine and Science.

Debra Weinstein, M.D., is Vice President for Graduate Medical Education at the Partners Healthcare System and Associate Professor of Medicine at Harvard Medical School. She is a graduate of Wellesley College and Harvard Medical School and completed training in internal medicine and gastroenterology at Massachusetts General Hospital (MGH), where she served as Associate Chief and Residency Director in Internal Medicine. Dr. Weinstein is Deputy Editor of *Academic Medicine*, a director of the MGH Institute for Health Professions, and a former director of the Acceditation Council for Graduate Medical Education. She chaired the Association of American Medical Colleges' Group on Resident Affairs and the Macy Foundation's 2011 conference on reforming GME. Dr. Weinstein was a 2006-2007 American Council on Education fellow and is a recipient of ACGME's "Parker Palmer Courage to Lead Award." She is involved in teaching and research related to GME and maintains a limited practice in gastroenterology.

Barbara O. Wynn, M.A., Senior Health Policy Analyst at RAND, has been involved with Medicare payment policies and graduate medical education financing for nearly 40 years. Ms. Wynn spent 24 years with the Health Care Financing Administration (HCFA, the predecessor agency to the Centers for Medicare & Medicaid Services). While at HCFA, she was directly involved with Medicare payment policies related to graduate medical education, beginning with the initial establishment of direct graduate medical education (GME) per-resident amounts in 1986 though the regulations implementing the GME provisions in the Balanced Budget Act of 1997. During her last 5 years at HCFA, Ms. Wynn represented HCFA on the Council on Graduate Medical Education. Since coming to RAND in 1999, she has been principal investigator for several projects related to financing graduate medical education.

Appendix E

Data and Methods to Analyze Medicare GME Payments

The committee's analyses, presented in Appendix F, are based on Medicare cost reports for the latest cost reporting periods beginning on or after May 1, 2010, as of the December 31, 2012, update of the Healthcare Cost Report Information System (HCRIS). Only teaching hospitals that reported having current-year residents in approved training programs were included. Hospitals with no current-year residents that received GME funding through the rolling average were excluded. The final analytic file included 207 cost reports beginning in fiscal year (FY) 2010 (mainly beginning on July 1, 2010) and 885 cost reports beginning in FY 2011 (beginning on or after October 1, 2011). The data were not adjusted to account for differences in the beginning dates of the cost reporting periods.

Most information used in the impact analysis was derived from Worksheet E-4, Form CMS-2552-10 (WS E4). The distribution of resident counts by type of hospital is shown in Table E-1. The type of hospital was assigned according to the Medicare provider number. The unweighted direct graduate medical education (DGME) resident count is the sum of the reported unweighted number of allopathic and osteopathic residents for the current year (WC E4, line 6) and the weighted dental and podiatric resident FTE count for the current year (WS E4, line 10). Unweighted counts for the dental and podiatric residents are not available.

TABLE E-1 Number of Hospitals and Total Direct Graduate Medical Education (DGME) Unweighted Resident Count by Type of Hospital

Type of Hospital	Number of Hospitals	Total Unweighted DGME Resident Count
General acute care	999	92,178
Children's	39	4,955
Cancer	8	713
Psychiatric[a]	18	253
Rehabilitation[a]	19	145
Long-term care	8	26
Critical access	1	2

[a] Freestanding hospitals only; residents in units are included in the general acute care count.

ESTIMATE OF THE NATIONAL PRA (APPENDIX F, TABLE F-2)

1. Determine the national average DGME PRA based on an estimate of total Medicare DGME payments and total DGME-weighted FTE resident count used in the payment determination net of children's hospitals.

    a. Total Medicare DGME payments = sum of Part A allocation (WS E, line 49) and 80 percent of Part B allocation (0.8 * WS E, Line 50)
    b. Total DGME weighted/capped resident count = sum of adjusted rolling average FTE count (WS 4, line 17, col. 1 + 2) and a derived weighted allowable additional direct GME FTE count (WS 4, line 24 ÷ line 23)

2. Determine a budget-neutral per-resident amount that, when adjusted by the GAF, would result in estimated payments equivalent to the total DGME payments determined in Step 1.The national average per resident amount (used to determine payment for additional slots beyond the 1996 cap) is adjusted by the geographic adjustment factor (GAF) used in the physician fee schedule.

a. Use the county/CBSA codes from the cost report to assign the appropriate 2013 GAF to each hospital
b. Determine the aggregate GAF-adjusted DGME payments using the DGME PRA from Step 1 = Sum of (Step 1a * GAF)$_{hosp}$
c. Determine a budget neutrality factor = Step 1a/Step2b
d. Determine the budget-neutral DGME PRA = Step 2b * Step 2c/ Step 1b

3. For acute care hospitals only, determine the national average IME PRA based on an estimate of total IME payments for operating plus IME for capital-related costs.

a. Current allowable IME for operating costs = sum of WS EA, line 28
b. Current allowable IME for capital-related costs = sum of WS L, Part I, line 6
c. Total IME capped resident count = Current allowable FTE count (WS EA, line 18)

4. Determine a budget-neutral per-resident amount that, when adjusted by the GAF, would result in estimated payments equivalent to total IME payments at analytically justified level

a. Analytically justified IME payments = Step 3a * 0.5 + Step 3b
b. Determine the aggregate GAF-adjusted IME payments using the GAF determined in Step 2a = Sum (Step 4a * GAF)$_{hosp}$
c. Determine a budget neutrality factor = Step 4a/Step 4b
d. Determine the budget-neutral IME PRA= Step 4b * Step 4c/ Step 3c

ESTIMATED IMPACTS FOR ACUTE CARE PPS HOSPITALS (APPENDIX F, TABLE F-3)

Hospital Characteristics

1. Number of residents = unweighted DGME current allopathic and osteopathic count (WS E4, line 6) plus weighted dental and podiatric resident FTE count (WS E4, line 10)
2. Medicare share = ratio of Medicare days to total inpatient days for Part A (WS E4, Line 28 column 1) and managed care (WS EA, Line 28, column 2)
3. Medicare discharges = WS S3, column 13, line 14

4. Low-income patient percentage

    a. If the SSI percentage is greater than 0, (SSI percentage (WS L, Part I, line 7) * Medicare days (WS S3, column 6, line 14) + Medicaid days (WS S3, column 7, line 14))/total inpatient days (WS S3, column 8, line 14)
    b. If the SSI percentage is missing, (Medicare days * Medicaid days/total inpatient days + Medicaid days)/total inpatient days

Impacts

The impacts were determined at the hospital level and summarized by aggregating the results by hospital characteristic.

1. Consolidated PRA Payments = From Table F-2, GAF-adjusted DGME PRA * DGME weighted/capped resident count + budget neutral GAF-adjusted IME PRA * IME capped counts
2. Total current GME payments = current DGME payments + current IME payments
3. Current average payment per resident = $\sum$ current GME payments/$\sum$ total weighted DGME count
4. Change in average payment per resident= $\sum$(Consolidated payments – current GME payments)/$\sum$ weighted DGME count)
5. Percent difference attributable to IME reduction = $\sum$ (.5 × current IME payments – current IME payments)/$\sum$ total current GME payments
6. Percent differences attributable to other changes = $\sum$(Consolidated PRA payments – (current GME payments – 0.5 current IME payments)/$\sum$ total current GME payments

Derived variables pertaining to hospital categories were determined as follows:

- Program size was based on the number of reported residents in the facility (from Worksheet S-3).
- The percentage of primary care residents was determined as the percentage of weighted residents in primary care programs (defined consistent with the Medicare PRA differential as residents in family medicine, general internal medicine, general pediatrics, preventive medicine, geriatric medicine, osteopathic general practice, and obstetrics/gynecology) to the total weighted residents in primary care and other specialty allopathic/osteopathic programs (i.e., exclusive of residents in podiatric and dental programs). Because

residents in non-primary-care specialty programs are more likely to be weighted at 0.5 FTE, the percentage primary care is overstated.

- Status under cap is a comparison of the hospital's unweighted GME allopathic and osteopathic resident count cap with the total number of residents reported based on the 1996 cap adjusted for new programs and the reallocation of residency slots. In the 2008 cost reports, there were 44 hospitals with only dental/podiatric residency programs and 26 hospitals with GME costs that did not report a current-year resident count on Worksheet E-3, Part IV.
- Medicare utilization was defined consistent with Medicare's share for purposes of determining direct GME payments ((Medicare fee-for-service + managed care days)/total inpatient days).

The comparison of 2008 GME costs and payments included the 1,103 hospitals that reported both GME costs and a 2008 resident count for purposes of direct GME payments. Except where noted, the resident counts are taken from Worksheet E-3, Part IV CMS-2552-1996.

Appendix F

Illustrations of the Phase-In of the Committee's Recommendations

This appendix provides three illustrations of the phase-in of the committee's recommendations. See Appendix E for a description of the data and methods used here.

EXAMPLE OF A PHASED-IN ALLOCATION OF MEDICARE GME FUNDING TO THE OPERATIONAL AND TRANSFORMATION FUNDS

Aggregate funding levels in the Operational Fund will be reduced initially to 90 percent of current graduate medical education (GME) funding levels and transition to 70 percent by Year 5. Table F-1 illustrates how funds would be allocated between the Operational and Transformation Funds over the first 5 years of the transition. The illustration assumes that the base-year funding amount would equal the most recent estimates provided by the Centers for Medicare & Medicaid Services and presented in Chapter 3. One method for reducing the operational funding to generate the funding for the Transformation Fund would be to phase in a 50 percent reduction in indirect medical education (IME) operating payments to acute care hospitals. In the first year, a 14 percent IME reduction would be needed to fund the Transformation Fund. If the additional IME reduction were evenly phased in over Years 2-5, approximately an additional

TABLE F-1 Example of a Phased-In Allocation of GME Funding to Operational and Transformation Funds in Transition Years 1–5 ($ in Billions)

	Baseline *(2012)*	Year 1	Year 2	Year 3	Year 4	Year 5 *(IME is halved)*
Operational Fund						
IME (declines 14% each year; funds transferred to the TF)	$6.8	$5.8	$5.236	$4.624	$4.012	$3.4
DGME (no change)	$2.8	$2.8	$2.8	$2.8	$2.8	$2.8
OF total amount for existing Medicare-funded slots	$9.6	$8.64	$8.04	$7.42	$6.81	$6.20
PLUS: Reallocation from the TF allocation:						
Children's hospitals *($=PRA × existing no. of CHGME slots)*	0	$0.425	$0.425	$0.425	$0.425	$0.425
Other specialty hospitals	0	0	0	0	0	$0.06
OF grand total	9.6	9.1	8.5	7.8	7.2	$6.7
Percentage of total GME funding	100%	94%	88%	82%	75%	70%
Transformation Fund						
Allocation from the OF	0	1.0	1.6	2.2	2.8	$3.4
LESS: Reallocation (*transfer*) to OF (*for children's and other specialty hospitals?*)	0	–0.425	–0.425	–0.425	–0.43	–0.5
TF funds *available* for rewarding performance; research, demonstrations, and evaluation; and additional positions where needed	0	$0.5	$1.1	$1.8	$2.4	$2.9
Total GME funding before inflation	$9.6	$9.6	$9.6	$9.6	$9.6	$9.6

NOTE: Baseline amounts (column 1) reflect Medicare GME funding in 2012. Assumes that the funding for children's hospitals and THCs would equal the same PRA as other training sites. Other specialty hospitals include psychiatric facilities, rehabilitation hospitals, other. CHGME = children's hospital graduate medical education; DGME = direct graduate medical education; GME = graduate medical education; IME = indirect medical education; OF = Operational Fund; PRA = per-resident amount; TF = Transformation Fund.

9 percentage-point reduction would be made each year. For example, the Year 2 reduction would be 23 percent.[1]

By Year 5, the funding formulas would be changed from hospital-specific amounts to a national combined per-resident amount (PRA). The separate direct graduate medical education (DGME) and IME funding streams would be changed to a combined PRA. The 50 percent weighting for residents beyond their initial residency program in the current DGME funding formula would be incorporated into the portion of the combined PRA attributable to DGME.

The combined PRA would be allocated initially on the basis of the number of Medicare-funded resident slots without regard to Medicare use rates. Ultimately, performance-based funding allocations would be implemented.

CALCULATING A COMBINED PER-RESIDENT AMOUNT

Table F-2 illustrates a general approach to determining the combined PRA. First, the average DGME payment per resident is calculated (exclusive of children's hospitals). The PRA would be budget neutral to estimated aggregate DGME payments for the same set of hospitals after adjustment by the Medicare geographic adjustment factor (GAF). The resulting DGME per-resident amount was $37,300 before any adjustments for inflation.[2]

The amount for residents beyond their initial residency period would be 50 percent of this amount, or $18,650.

Next, we calculated an average GAF-adjusted IME payment per resident for general acute care hospitals that would be budget neutral to estimated IME payments if IME operating payments were reduced by 50 percent, consistent with the Medicare Payment Advisory Commission's finding that the current levels are twice the amount empirically attributable to higher patient care costs (MedPAC, 2010). The resulting IME per-resident amount was $43,435.

The combined PRA, the sum of the IME and DGME component, or $80,735, would be applicable to residents in their initial residency period. The combined PRA for residents beyond their initial residency period would be $62,085 or 77 percent of the PRA for residents in their initial residency period. In other words, residents in subspecialty programs would count as 0.77 FTE if the 0.5 weighting were applied to the DGME portion of the

[1] The reductions would be made only to the operating IME payment based on the Medicare Payment Advisory Commission's findings. The capital adjustment is empirically derived, as are the IME payments to psychiatric and rehabilitation hospitals.

[2] This amount does not take into account the 6 percent differential between primary care and other residency programs that currently applies to hospital-specific PRAs but not to the national PRA applicable to new residency slots.

TABLE F-2 Illustration of Combined PRA Calculation, Before Inflation Adjustment

Type of Funding	GME Payments ($ in millions)	Resident Count Used to Determine Payment	Current Average Payment Per Resident	Budget-Neutral Payment (before GAF adjustment)
DGME	$2,910	79,278	$36,700	
Adjustment for children's hospitals	–$2	–3,317	$565	
Net DGME for combined PRA	$2,908	75,961	$38,280	$37,300
IME: PPS hospitals only	$6,996	78,625		
50 percent reduction in operating IME	–$3,318			
Net IME for combined PRA	$3,678		$46,775	$43,435
Combined PRA for residents in initial residency period				$80,735
Combined PRA for residents beyond initial residency period				$62,085
Weighting factor for residents beyond initial residency period				77%

NOTE: DGME = direct graduate medical education; GAF = geographic adjustment factor; IME = indirect medical education; PPS = prospective payment system; PRA = per-resident amount.

SOURCE: IOM analysis of the 12/31/13 CMS Healthcare Cost Report Information System update.

composite rate and no weighting was applied to the IME portion. The committee suggests that the proposed GME Policy Council review this weighting scheme and also assess whether the combined PRA should vary for other types of residents, for example, residents in primary care, dentistry and podiatry, and rural training programs.[3]

[3] The GME Policy Council might also consider whether the geographic adjustment to the PRA should be revised to reflect specific GME cost components. See the Institute of Medicine report *Geographic Adjustment in Medicare Payment. Phase I: Improving Accuracy* for background and recommendations regarding the Medicare geographic price indexes (available at http://www.nap.edu/catalog.php?record_id=13138) (accessed April 23, 2014).

ILLUSTRATION OF THE IMPACT OF CHANGING TO A COMBINED PER-RESIDENT AMOUNT

Table F-3 illustrates the types of redistributions that will occur with the implementation of the combined PRA by type of hospital for the Prospective Payment System hospitals in our cost report analysis file. The percentage change in payment attributable to the 50 percent reduction in IME payments (–34 percent) is shown separately. It produces relatively minor differences in the impacts across hospital groups that reflect differing proportions of total GME payments attributable to IME. IME payments are on average a higher proportion of total GME payments in hospitals with a large number of Medicare discharges than hospitals with relatively fewer discharges. As a result, the IME reduction has a greater impact on GME funding for residents at the larger hospitals. The remaining changes are budget neutral in the aggregate.

Under current policy, the DGME counts and the IME counts are not the same because of differences in the rules for counting resident time. Moreover, because of the rolling average used in the current methodology, some hospitals are receiving funding for more residents than they are training. This policy was implemented when there was a projected surplus of physician supply and is no longer appropriate. Nevertheless, the illustration uses the resident counts to determine IME and DGME payments under current Medicare policies. The committee suggests that a single policy for counting residents (with appropriate weighting) should apply to the allocation of the combined PRA. Once the funding flows to the program sponsor, most issues that have complicated resident counts under current IME and DGME funding policies would be eliminated and the counting rules would be more straightforward.

REFERENCE

MedPAC (Medicare Payment Advisory Commission). 2010. Graduate medical education financing: Focusing on educational priorities. In *Report to the Congress: Aligning Incentives in Medicare*. Washington, DC: MedPAC. Pp. 103-126.

TABLE F-3 Illustration of Impacts of Changing to Combined PRA

	Number of Hospitals	Total Weighted DGME Count	Current DGME Payments (millions)	Current IME Payments (millions)	Consolidated PRA Payments (millions)	Current Average Payment per Resident	Change in Average Payment per Resident	Percentage Difference in Payment Attributable to IME Reduction	Percentage-Difference in Payment Attributable to Other Changes
All hospitals	1,016	76,247	$2,924	$7,097	$6,633	$131,428	$(44,435)	-34%	0%
Number of residents									
<10	270	1,269	$52	$114	$100	$131,365	(52,496)	-32%	-8%
10-99	488	15,278	$701	$1,509	$1,260	$144,645	(62,177)	-32%	-11%
100-249	136	17,861	$735	$1,651	$1,560	$133,586	(46,246)	-33%	-2%
250-499	84	23,366	$790	$2,042	$2,057	$121,183	(33,149)	-34%	7%
500 or more	38	18,473	$645	$1,781	$1,656	$131,372	(41,733)	-35%	3%
Medicare share quintile									
1: < 36.2 percent	203	29,643	$727	$1,974	$2,600	$91,106	(3,393)	-35%	31%
2: 36.2 to < 44.6 percent	203	21,591	$896	$2,227	$1,895	$144,643	(56,857)	-34%	-5%
3: 44.6 to < 51.3 percent	203	12,111	$585	$1,329	$1,040	$158,044	(72,181)	-33%	-13%
4: 51.3 to < 58.1 percent	203	7,109	$377	$840	$611	$171,133	(85,246)	-33%	-17%
5: => 58.1 percent	204	5,794	$340	$726	$487	$184,124	(100,055)	-32%	-22%
Medicare discharge quintile									
1: < 1,941 discharges	203	6,140	$145	$276	$533	$68,573	18,167	-31%	58%
2: 1,941-3,558 discharges	203	10,039	$339	$625	$891	$96,081	(7,374)	-31%	23%
3: 3,559-5,169 discharges	203	10,529	$414	$919	$906	$126,684	(40,673)	-33%	0%
4: 5,170-7,684 discharges	203	16,494	$592	$1,553	$1,421	$130,061	(43,914)	-34%	1%
5: > 7,684 discharges	204	33,046	$1,434	$3,722	$2,883	$156,039	(68,785)	-34%	-10%

Low-income patient percentage quintile									
1: < 7.4 percent	203	7,127	$363	$918	$618	$179,708	(93,036)	–34%	–17%
2: 7.4 to < 12.5 percent	203	14,365	$629	$1,587	$1,241	$154,219	(67,846)	–34%	–10%
3: 12.5 to < 18.1 percent	203	15,917	$646	$1,613	$1,390	$141,970	(54,667)	–34%	–5%
4: 18.1 to < 25.3 percent	203	15,875	$662	$1,487	$1,377	$135,391	(48,625)	–33%	–3%
5: > 25.3 percent	204	22,962	$624	$1,492	$2,007	$92,137	(4,716)	–33%	28%

NOTE: DGME = direct graduate medical education; IME = indirect medical education; PRA = per-resident amount.