

Graduate Medical Education

Overview

Funding Basics of Graduate Medical Education (GME)

Medicare is the single largest payer supporting Graduate Medical Education (GME) in the United States. Medicare spent approximately \$10 billion in 2012 on GME payments,¹ making up approximately two thirds of all funding. Additional sources of GME funding include Medicaid, patient care revenues, private payers, Veterans Affairs/Department of Defense, Health Resources and Services Administration (for children's hospitals) and other state and federal programs. Medicare GME funding is divided into two areas: Direct Graduate Medical Education (DGME) and Indirect Graduate Medical Education (IGME).

DGME Payments

DGME includes costs that are directly related to educating residents/fellows (trainees):

- Trainee and faculty salaries, benefits, and administrative expenses
- Other overhead costs

Basic Payment Formula: DGME payments are calculated using on a base period, per-resident amount (PRA) multiplied by the number of full-time equivalent (FTE) trainees the hospital staffed in the base period (i.e., 1 resident *working in patient care activities* full-time in one hospital = 1.0 FTE). The base period and PRA are typically based on the hospital's cost reporting period beginning in FY 1984 and the PRA is indexed for inflation each year. This is then multiplied by the hospital's ratio of Medicare inpatient days to total days to arrive at the DGME payment amount the hospital will receive from Medicare.

$$(PRA \times FTE) \times (Medicare \text{ inpatient days} / \text{total days}) = Medicare \text{ DGME } \$ \text{ Per Trainee}$$

Example, Resident: (\$85,000 x 1.0) x (212 / 365) = \$49,369.86
Example, Fellow: (\$85,000 x 0.5) x (212 / 365) = \$24,684.93

Trainees in their initial residency period (IRP) are counted as 1.0 FTE. Trainees who pursue training beyond the IRP or decide to retrain in another specialty are counted as 0.5 FTE. IRP examples include:

- General surgery = 5 years
- Internal Medicine = 3 years
- Obstetrics and gynecology = 4 years

Since cardiothoracic surgery trainees in traditional programs have already completed their

¹"HEALTH CARE WORKFORCE Federal Investments in Training and the Availability of Data for Workforce Projections." US Senate HELP Committee. April 9, 2014. <https://www.help.senate.gov/imo/media/doc/Kohn.pdf>.

general surgery residency and their IRP of five years, they are counted as 0.5 FTE for Medicare DGME payments. 6-year integrated program trainees will have 5 years at 1.0 FTE and one year at 0.5 FTE.

IGME Payments

IGME includes compensation to teaching hospitals for higher inpatient operating costs associated with residency programs:

- Lower productivity
- Standby capacity
- Increased patient complexity (above MS-DRG payments)

Basic Payment Formula: IGME payments are calculated as a percentage add-on to the hospital's Medicare per-case MS-DRG payments based on an intern and resident-to-bed ratio (IRB). The IRB is multiplied by a regional multiplier to calculate the IGME MS-DRG percentage increase. The Medicare multiplier since 2003 has been 1.35 and basically amounts to a 5.5% increase to MS-DRG payments for 10% increase in the IRB.

$$\text{Multiplier} \times ((1 + \text{IRB})^{0.405} - 1) = \text{IGME \%} \quad \text{Example: } 1.35 \times ((1 + 0.215)^{0.405} - 1) = 11\%$$

Example of impact on MS-DRG Payment

*MS-DRG 236; Coronary Bypass w/o Cardiac Catheterization w/o MCC = \$21,240.74**

Example: \$21,240.74 x (1.11) = \$23,577.22

Increased payment of \$2,336.48 per case

**Based on 2012 IPPS Medicare National rate*

STS and GME

In the coming decades, the United States will face a projected shortage of both primary care and specialist physicians, including cardiothoracic surgeons. Robust, data-driven forecasting of physician supply and demand from a recent report by the American Association of Medical Colleges (AAMC) identified a projected physician shortfall of 40,800 to 104,900 physicians by 2030.² Analyses commissioned at the state-level overwhelmingly support this conclusion, with thirty three states identifying current or future physician shortages—including a shortfall of at least 1,500 cardiothoracic surgeons by 2025.³

² "2017 Update: The Complexities of Physician Supply and Demand: Projections from 2015 to 2030." AAMC Projections. February 28, 2017. https://aamc-black.global.ssl.fastly.net/production/media/filer_public/a5/c3/a5c3d565-14ec-48fb-974b-99fafaecb00/aamc_projections_update_2017.pdf.

³ "Recent Studies and Reports on Physician Shortages in the US." Center for Workforce Studies, Association of American Medical Colleges. October 2012. <https://www.aamc.org/download/100598/data/>.

Critics of such forecasts point to the U.S. health care system's increasing utilization of advanced practice registered nurses (APRNs) and physician assistants (PAs), and the identification of further efficiencies in primary-care settings as means of mitigating predicted shortages.⁴ However, the AAMC's report accounted for the increasing supply of APRNs and PAs in their predictions, as well as changes in payment and delivery systems such as accountable care organizations and retail clinics. Despite controlling for these factors, a shortage of 7,300 to 43,100 primary care physicians is forecasted. Moreover, significant shortfalls are predicted amongst surgical specialties whose services are not well addressed by mid-level providers. The AAMC report predicts a shortage of between 19,800 and 29,000 surgeons by 2030.

The physician shortage is driven by many factors, including: an aging population and the retirement of senior physicians; an outdated cap on resident positions; a geographic maldistribution of specialists; and the ever-increasing technological proficiencies necessary to be competitive in the field. Unfortunately, shortages will disproportionately impact vulnerable and underserved populations. These groups include the approximately twenty percent of Americans who live in rural or inner-city locations that are designated as health professional shortage areas (HPSA).⁵ Since Medicare accounts for the vast majority of GME funding, its policies have a massive impact on the system and are an important place to start when looking for ways to address the shortage.

Growing concern regarding the projected shortage of surgeons of all specialties was evident in the American College of Surgeons' 2017 Policy and Position Paper on GME Reform.⁶ One factor causing considerable concern is that older physicians are retiring alongside the aging patient population. According to the latest AAMC workforce report, as of 2015 there were just 4,485 active cardiothoracic surgeons nationwide, which equated to 1 cardiothoracic surgeon per 71,665 people (increased from 62,577 people in a 2008 report). At the same time, fifty seven percent of active cardiothoracic surgeons are older than fifty five years. Among senior surgeons, forty four percent plan to retire between the age of sixty six and seventy years of age, escalating the shortage.⁷ And even as the physician supply decreases, the patient demand increases: Baby Boomers are reaching older adulthood. The Medicare population is expected to grow from fifty four million Americans in 2015 to over eighty

⁴ Gudbranson, E; Glickman, A; Emanuel, EJ. "Reassessing the Data on Whether a Physician Shortage Exists." The JAMA Network. May 16, 2017. <http://jamanetwork.com/journals/jama/article-abstract/2613209>

⁵ HPSAs are designations that indicate health care provider shortages in primary, dental, or mental health care. There is currently no federal data on cardiothoracic surgery shortage areas.

⁶ "ACS Policy & Position Paper on GME Reform." American College of Surgeons. January 2017. https://www.facs.org/~media/files/advocacy/workforce/2017_ahp_gmepaperappendixprimer.ashx..

⁷ Ikonomidis, J. S. "The Society of Thoracic Surgeons Thoracic Surgery Practice and Access Task Force: 2014 Workforce Report." US National Library of Medicine. September 13, 2016. [https://www.ncbi.nlm.nih.gov/labs/articles/27637287/.](https://www.ncbi.nlm.nih.gov/labs/articles/27637287/)

million beneficiaries by 2030.⁸ Many researches have raised serious concerns about the dire consequences of a shortage of cardiothoracic surgeons tasked with caring for a growing Medicare-eligible population.⁹ Cardiovascular disease accounts for more than one-third of the deaths in the U.S., and the Medicare population is at the highest risk. Older patients will suffer disproportionately if the projected shortage of surgeons is not addressed.

Another major factor that exacerbates the shortage as older physicians retire is the federal cap on residency positions, established by Congress in the Balanced Budget Act of 1997. Congress capped the number of residency positions that Medicare would support at the number of residents who were training in a given teaching hospital as of December 31, 1996.¹⁰ Any new trainee position created after this twenty-year-old cap is not federally funded. Because of the cap, the number of thoracic surgery training programs has remained fairly constant since the late 1990's, with sixty nine traditional thoracic surgery residency programs (general surgery residency followed by thoracic surgery residency training) and twenty seven integrated thoracic surgery residency programs (general surgery training and thoracic surgery training combined into a six year program.)

In contrast, medical schools increased enrollment by twenty five percent between 2002 and 2015 in an attempt to address the projected physician shortage.¹¹ As the number of medical school graduates increases and the number of GME training programs remains stagnant, there will soon be a shortage of GME training opportunities for newly graduated physicians across all medical specialties. According to the latest report of the Accreditation Council for Graduate Medical Education, the goal of increasing medical school enrollment was achieved; enrollment is projected to have grown by thirty percent since 2002 by 2018, an increase of 4,946 students.¹² Yet because Congress limited the number of residents that can receive DGME funding, hospitals have no incentive to increase graduate medical education programs or start new programs.

The Affordable Care Act (ACA) of 2010 attempted to address these physician workforce issues by including a provision, effective for portions of cost reporting periods occurring on or after July 1, 2011, which redistributed DGME and IGME payments for trainee FTE's from hospitals that had fewer residents than their caps. CMS was to take sixty five percent of the

⁸ "Report to the Congress: Medicare and the Health Care Delivery System" MedPAC.gov. 2015. <http://www.medpac.gov/docs/default-source/reports/chapter-2-the-next-generation-of-medicare-beneficiaries-june-2015-report-.pdf?sfvrsn=0>

⁹ Grover, Atul; Orłowski, Janis; Erikson, Clese. "The Nation's Physician Workforce and Future Challenges." Improving U.S. Healthcare Symposium. THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES, 2016. <https://www.aamc.org/download/452922/data/thenationsphysicianworkforceandfuturechallenges.pdf>

¹⁰ Iglehart, John K. "The Residency Mismatch." THE NEW ENGLAND JOURNAL OF MEDICINE. July 25, 2013. <http://www.nejm.org/doi/pdf/10.1056/NEJMp1306445>.

¹¹ "Nation's Medical Schools Increase Enrollment by 25 Percent Since 2002." AAMC. May 5th, 2016. https://www.aamc.org/newsroom/newsreleases/459956/enrollment_survey_05052016.html

¹² "Number of Accredited Programs Academic Year 2017-2018." August 31, 2017. ACGME <https://apps.acgme.org/ads/Public/Reports/ReportRun?ReportId=3&CurrentYear=2017&AcademicYearId=2017>

DGME and IGME residency slots that went unused by a hospital for the past three years and redistribute them according to certain criteria. Seventy percent of the redistributions were to go to hospitals with resident-to-population ratios in the lowest quartile, and thirty percent to hospitals in health professional shortage areas (HPSA). On August 15, 2011, CMS posted a list of hospitals that would be either losing or gaining residency slots from their cap. Fifty eight hospitals received an increase in their caps while 276 hospitals saw reductions in their caps. In addition, the ACA called for training positions from hospitals that closed on or after March 28, 2008 to be redistributed to other hospitals. Prior to this provision, DGME and IGME payments allocated to hospital systems that closed were not redistributed and simply vanished. These reforms were a positive step, but have not solved the larger problem caused by the outdated caps.

Failure to increase federal funding for GME will prevent current thoracic surgery residency programs from expanding training opportunities and new programs from being created. Given the facts of population growth and aging, an increase in federal funding for GME is essential to address workforce shortages and access limitations in the future. Ensuring an adequate workforce, including the supply of skilled surgical specialists, will be crucial to successful health care reform implementation.

Projected manpower shortages in the thoracic surgical workforce are also compounded by a geographic maldistribution of physicians: some areas have more than enough cardiothoracic surgeons, while others have none. While this is well recognized in the area of primary care, there are data on the surgical fields as well. The best documented information is in General Surgery. An Institute of Medicine (IOM) Report noted that the current GME program does not produce adequate numbers of physicians prepared to work in needed specialties or geographic areas, and has failed to train and encourage physicians to practice in the community-based settings where most Americans seek care.¹³ Furthermore, since a significant percentage of graduates of GME programs enter clinical practice in close proximity to their final program, the specialty mix and geographic location of GME programs are essential considerations to resolve the maldistribution of practicing physicians. Addressing inadequate physician distribution at the GME level is likely to have effects that are long lasting and less disruptive to existing physician practices than other options. This strategy requires a coordinated plan for identifying long-term physician workforce needs.

As all of these trends play out, the employment market is expanding. Cardiothoracic surgery is diversifying because of new advancements in mechanical circulatory support devices, endovascular aortic approaches, and percutaneous cardiac valves, to name a few growth areas. In a 2014 Thoracic Surgery Practice and Access Task Force Survey commissioned by STS, most respondents reported that it had been less than 3 years since their practices hired a new surgeon, which is similar to the findings of prior surveys. In a shift from previous surveys,

¹³ “Graduate Medical Education That Meets the Nation's Health Needs.” The Institute of Medicine Report on GME. July 29, 2014. <http://www.nationalacademies.org/hmd/Reports/2014/Graduate-Medical-Education-That-Meets-the-Nations-Health-Needs.aspx>

however, respondents reported planning to hire at least 1 new surgeon in the next year.¹⁴ In this new market for cardiothoracic surgeons, recruits must have “special skills.” These requirements have increased the training time to 9 years or more for forty percent of cardiothoracic surgeons. Lacking federal support, surgeons have disparate access to new training techniques depending on where they are located.

STS Position on GME Policy

STS is pursuing the following professional and public policy options that may help address the looming cardiothoracic surgeon shortage and better distribute graduate medical education funding.

- To keep pace with increased medical school enrollment and patient demand, the federal government must increase the number of full time equivalent residents for which hospitals receive funding by lifting the caps. Medicare must continue supporting training costs by supporting at least a 15 percent increase in GME positions, allowing teaching hospitals to prepare another 4,000 physicians a year to meet the needs of a growing and aging population. STS has endorsed HR 2267/S 1301, the Resident Physician Shortage Reduction Act, as a step in the right direction towards this goal.
- There is no reliable funding mechanism to address physician and other health care professional development. It is critical to provide reliable funding, subject to periodic reassessment, which ensures a stable and thoughtful distribution in alignment with the changing needs of the nation.
- Some areas of the US face much more severe shortages than others, whereas a system that best serves all Americans should accurately reflect current and future health care needs. It is crucial to investigate geographical and economic factors that lead to the selection of cardiothoracic residency positions by applicants. It may be necessary to redistribute residency positions within cardiothoracic surgery programs.

Several pilot programs, such as the one undertaken by Utah, provide valuable lessons in ensuring that residents are located where they are needed. The Utah Medical Education Commission (UMEC) applied for and received a waiver from CMS to distribute DGME funding based on the needs of various specialties as demonstrated by workforce surveys. During the project, FTE positions increased by thirty seven percent, including forty five positions outside the waiver that were “the result of the teaching hospitals within the consortium restructuring and reallocating their own GME resources based on UMEC’s recommendations.”¹⁵ This program demonstrated the effectiveness of using data and public policy to redistribute funding and thus, surgeons.

Other options that incentivize surgeons to practice in underserved areas include loan

¹⁴ Ikonomidis, 2016.

¹⁵ ACS Policy & Position Paper on GME Reform.

deference and/or forgiveness programs, and immigration assistance for foreign-born surgeons. These types of policy solutions reduce the economic barriers for medical professionals to choose work in underserved areas.

- As teaching hospitals increasingly rely on new technologies to train the next generation of surgeons, Congress should pass legislation supporting the development of medical simulation technologies that augment training. Medical simulation clinical skills training allows physicians to train and improve techniques without any risk or harm, resulting in reduced errors and improved outcomes for patients while ultimately reducing costs. Some states currently provide grants for this purpose; federal funding would ensure that all residents benefit.

Approved: January 2018 (STS Board of Directors)