



March 2018

PHYSICIAN WORKFORCE

HHS Needs Better Information to Comprehensively Evaluate Graduate Medical Education Funding

GAO Highlights

Highlights of [GAO-18-240](#), a report to congressional requesters

Why GAO Did This Study

An adequate, well-trained physician workforce is essential for providing access to quality health care. While a number of factors affect the supply and distribution of physicians, GME is a significant determinant. A significant portion of GME training funds come from federal programs and states.

This report (1) describes the amount and distribution of federal government and state Medicaid agency spending on GME; (2) describes what is known about GME costs; and (3) examines the extent to which the federal government collects information to understand its investment in GME. GAO reviewed reports, agency websites, and interviewed agency officials to identify federal programs that fund the clinical training of residents and were authorized through 2017. GAO analyzed 2015 data—the most recent data available at the time of GAO’s analysis—including from a state survey. All 50 states and the District of Columbia responded to the survey. GAO reviewed literature, interviewed experts from seven organizations knowledgeable about GME costs, and analyzed Medicare data. GAO also reviewed documentation from HHS and the Department of Veterans Affairs (VA) and interviewed agency officials.

What GAO Recommends

GAO recommends that HHS coordinate with federal agencies, including VA, to (1) identify information needed to evaluate federal GME programs, and (2) identify opportunities to improve the quality and consistency of information, and implement these improvements. HHS concurred with both recommendations.

View [GAO-18-240](#). For more information, contact James Cosgrove at (202) 512-7114 or cosgrovej@gao.gov.

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What GAO Found

Federal agencies and state Medicaid agencies spent over \$16.3 billion in 2015 to fund graduate medical education (GME) training for physicians—commonly known as residency training. The federal government spent \$14.5 billion through five programs, and 45 state Medicaid agencies spent \$1.8 billion. About half of teaching sites that received funding—such as teaching hospitals—received funds from more than one of the five programs.

Federal Spending on Graduate Medical Education (GME) Training, 2015

Program	Total GME spending (dollars in millions)	Percent of total spending (percent)
HHS programs		
Medicare	10,335	71
Medicaid (federal share)	2,351	16
Children’s Hospital GME Payment Program	249	2
Teaching Health Center GME Program	76	1
VA program	1,499	10
Total	14,509	100

Source: GAO analysis of Departments of Health and Human Services (HHS) and Veterans Affairs (VA) data; and GAO web-based survey administered to state Medicaid agencies. | GAO-18-240

GME training costs vary due to the characteristics of teaching sites, such as the number of residents trained and their specialty, which can make it difficult to compare training costs across sites. Further, challenges exist in measuring training costs because some costs, such as faculty teaching time, are difficult to identify. Also, there is no standard method for identifying and capturing training costs, and each teaching site may vary in how it does so.

While federal agencies generally collect information needed to manage their individual programs, this information is not sufficient to comprehensively understand whether the federal investment in GME training meets national physician workforce needs. The information agencies collect is not always complete or consistent within or across programs. For example, national data on GME training costs are not systematically collected, and some agencies lacked data to understand the total amount spent, or the outcomes of their programs, such as where supported residents went on to practice. GAO recommended in 2015 that the Department of Health and Human Services (HHS) develop a comprehensive planning approach to identify and address areas of health care workforce need. HHS concurred and identified steps it could take. While HHS has yet to take these steps, the information currently available is also insufficient for such planning. Comprehensive information is needed to identify gaps between federal GME programs and national physician workforce needs—particularly the distribution of physicians geographically or across specialties—and to make or recommend to Congress changes to improve the efficient and effective use of federal funds to meet those needs.

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Abbreviations

CMS	Centers for Medicare & Medicaid Services
CHGME	Children’s Hospitals Graduate Medical Education Payment Program
DGME	Direct Graduate Medical Education
GME	graduate medical education
FTE	full-time equivalent
GPRA	Government Performance and Results Act of 1993
GPRAMA	GPRA Modernization Act of 2010
HHS	Department of Health and Human Services
HRSA	Health Resources and Services Administration
IME	Indirect Medical Education
IRIS	Intern and Resident Information System
MAC	Medicare Administrative Contractor
PRA	per resident amount
THCGME	Teaching Health Center Graduate Medical Education Program
VA	Department of Veterans Affairs

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March 9, 2018

Congressional Requesters

An adequate, well-trained, and diverse physician workforce is essential for providing Americans with access to quality health care services. However, studies have identified shortages of certain types of physicians, and rural areas may be more likely to experience shortages.¹ While a number of factors affect the supply and distribution of physicians, their graduate medical education (GME)—commonly known as residency training—is a significant determinant.

GME training is funded through both public and private sources, with a significant amount coming through a number of federal programs and states. The federal programs are managed by multiple agencies—largely through the Department of Health and Human Services (HHS). HHS funding for GME training is distributed by the Centers for Medicare & Medicaid Services (CMS) through the Medicare program, and states may choose to make payments for GME training with state Medicaid funds, which are matched by federal Medicaid funding. Other, smaller sources of federal funding include the Children’s Hospitals GME (CHGME) Payment Program and the Teaching Health Center GME (THCGME) Program—payment programs administered by HHS’s Health Resources and Services Administration (HRSA)—as well as funding from the Department of Veterans Affairs (VA) for GME training that occurs in its medical facilities.

However, we and other experts have raised concerns about the ability of federal programs that fund GME training, especially Medicare, to address current and future physician workforce needs.² In a 2015 report, we found that HHS cannot target Medicare GME funding to specific areas of workforce need because funds are disbursed based on a statutory

¹See, for example, S.M. Petterson, et al., *Unequal Distribution of the U.S. Primary Care Workforce (2013)*, accessed November 14, 2017, <http://www.aafp.org/afp/2013/06D1/od1.pdf>.

²See, for example, National Academy of Medicine, *Graduate Medical Education that Meets the Nation’s Health Needs* (Washington, D.C.: The National Academies Press, 2014).

formula that is unrelated to projected needs.³ As a result of this and other factors, stakeholders have long raised concerns about the distribution of residents geographically.⁴ In a 2017 report, we found that there is an uneven distribution of residents across the country, with most concentrating in certain urban centers and the northeast, where GME training programs have historically been located.⁵ The distribution of residents is particularly important given evidence that physicians tend to practice in geographic areas similar to those where they complete their GME training.⁶

We and others have also raised concerns about a lack of comprehensive planning for the federal investment in GME training and have called for increased accountability and transparency of federal GME funding.⁷ For example, the National Academy of Medicine found that there is no single entity that oversees the GME system, especially federal financing, and that information about how federal funding, especially Medicare and Medicaid GME payments, is used to support GME training is lacking. In a 2015 report, we found that HHS conducts limited ongoing, comprehensive assessments of the performance of federal health care workforce programs, including those that fund GME training, in meeting the national health care workforce needs.⁸ In addition, we recommended that, to

³GAO, *Health Care Workforce: Comprehensive Planning by HHS Needed to Meet National Needs*, [GAO-16-17](#) (Washington, D.C.: Dec. 11, 2015).

⁴See, for example, F. Mullan, C. Chen, and E. Steinmetz, "The Geography of Graduate Medical Education: Imbalances Signal Need for New Distribution Policies," *Health Affairs*, vol. 32, no. 11 (2013): 1914-1921.

⁵See GAO, *Physician Workforce: Locations and Types of Graduate Training Were Largely Unchanged, and Federal Efforts May Not Be Sufficient to Meet Needs*, [GAO-17-411](#) (Washington, D.C.: May 2017).

⁶See S.D. Seifer, K. Vranizan, and K. Grumbach, "Graduate Medical Education and Physician Practice Location: Implications for Physician Workforce Policy," *JAMA*, vol. 274, no. 9 (1995): 685-691; and K.J. Quinn, et al., "Influencing Residency Choice and Practice Location through a Longitudinal Rural Pipeline Program," *Academic Medicine*, vol. 86, no. 11 (November 2011): 1397-1406.

⁷See, for example, National Academy of Medicine, *Graduate Medical Education*, 2014; Council on Graduate Medical Education, *Towards the Development of a National Strategic Plan for Graduate Medical Education* (Rockville, Md.: April 2017); Council on Graduate Medical Education, *Enhanced Flexibility in Graduate Medical Education* (Rockville, Md.: September 2007); and Medicare Payment Advisory Commission, "Ch. 4: Graduate medical education financing: Focusing on education priorities," *Report to the Congress: Aligning Incentives in Medicare* (Washington, D.C.: June 2010).

⁸[GAO-16-17](#).

ensure that HHS workforce efforts meet national needs, HHS should develop a comprehensive and coordinated planning approach to guide its health care workforce development programs. In making this recommendation we noted that, without such planning, HHS cannot fully identify the gaps between existing programs and national needs as well as the actions needed to address these gaps.⁹

Given the significant role of the federal government in supporting GME training, you asked us to review aspects of this spending and related federal oversight. In this report, we:

1. Describe how much the federal agencies and state Medicaid agencies spent on GME training and the distribution of spending by geographic area;
2. Describe what is known about the costs of GME training programs; and
3. Examine the extent to which the federal government collects information to understand its investment in GME training.

To describe the amount the federal agencies and state Medicaid agencies spent on GME training and how that spending varied by geographic area, we reviewed prior GAO reports, searched federal agency websites, and interviewed agency officials to identify federal programs that fund GME training. We analyzed 2015 data, the most recent reliable data available at the time of our analysis, on the five federal programs that fund GME training—HHS’s Medicare, Medicaid, CHGME, and THCGME programs and VA’s physician GME training

⁹In response, HHS concurred with our recommendation and identified steps that it would take toward a more comprehensive and coordinated approach to workforce planning. HHS noted that, among other things, it could convene an interagency group to assess such things as gaps in workforce programs and potential requests to the Congress for modified or expanded legislative authority. In a May 2017 report, we noted that HHS officials said the agency had not taken steps to convene this group, but said that it is still considering doing so in the future. See [GAO-16-17](#) and [GAO-17-411](#).

program.¹⁰ Specifically, we analyzed 2015 data on the amount spent and number of full-time equivalent (FTE) residents supported by each recipient of funding from Medicare, CHGME, THCGME, and the VA program.¹¹ Comprehensive data on Medicaid GME spending and FTE residents supported were not available from CMS, so we collected 2015 federal and state data using a survey of state Medicaid agencies from 50 states and the District of Columbia.¹² All agencies responded to the survey. We merged data from the five programs based on each funding recipient's Medicare identification number.¹³ For each funding recipient, we calculated the total amount of federal, as well as state Medicaid, funding received for GME training and, where FTE resident data were available, the amount of funding received per FTE resident adjusted for

¹⁰We included in our review programs that were authorized through at least fiscal year 2017 and supported the clinical training of physicians in GME programs that were administered by civilian teaching sites. Other federal programs that fund GME training but did not meet our inclusion criteria include HRSA's Primary Care Residency Expansion Program and its Preventive Medicine Residency Program; the Centers for Disease Control and Prevention's Preventive Medicine Residency and Fellowship program; the National Institutes of Health's GME training programs; and the Department of Defense's GME training program. GAO previously found that four federal departments—HHS, VA, Department of Defense, and the Department of Education—administered programs that supported postsecondary training or education specifically for physician and other direct health care professionals. See GAO, *Health Care Workforce: Federally Funded Training Programs in Fiscal Year 2012*, [GAO-13-709R](#) (Washington, D.C.: Aug. 15, 2013).

¹¹HRSA provided THCGME program data for two academic years spanning from July 2014 through June 2016. We used this data to approximate the amount it spent on GME training that occurred in fiscal year 2015. VA was unable to provide the total amount it paid each affiliate for resident rotations in a VA medical center, so we estimated these amounts based on the number of FTEs trained by the affiliate and the VA medical center's average payment rates.

¹²The time period defined as "2015" varied by agency. Specifically, Medicare cost report data that we used were for hospitals' 2015 cost reporting period, which can vary by hospital. We used federal fiscal year 2015 data for HRSA's CHGME and THCGME programs and for VA's physician GME program. And, state Medicaid agencies varied in the time period for which data were provided. Most states (39) provided data by state fiscal year 2015, which varied by state, while 4 states provided data for calendar year 2015, and 2 states provided data for federal fiscal year 2015.

¹³Funding recipients included teaching hospitals, teaching health centers, medical schools, and other health care facilities.

geographic differences in the cost of labor.¹⁴ We also calculated the extent to which recipients received funding from more than one federal source.¹⁵ To assess the reliability of each of these sources of data, we reviewed documentation, interviewed agency officials, and checked the data for obvious errors. While we discuss CMS data collection efforts later in this report, we found the data to be sufficiently reliable for the purposes of our reporting objective.

To describe what is known about the costs of GME training programs, we interviewed experts from seven research and industry organizations about the costs to train residents, teaching sites' measurement of costs, and how costs compare to federal funding levels.¹⁶ We also conducted a literature review of studies that estimated the costs of training physician residents. To identify relevant studies, we searched multiple reference databases and reviewed the abstracts of studies initially identified to select potentially relevant studies for full review.¹⁷ We also asked for studies that estimated the costs of GME during interviews with experts. Of the over 300 studies we initially identified, 10 were deemed relevant because the studies provided estimates of the costs of training residents. We also analyzed 2015 data on the costs of GME training reported by

¹⁴To adjust the amount of funding received per FTE resident, we applied the CMS wage index by dividing the labor share of the amount paid per FTE resident by the wage index for each funding recipient. The labor share is the portion of the cost that is adjusted for regional wage differences, while the non-labor share is only adjusted for hospitals in Alaska and Hawaii for cost-of-living differences. For each recipient of federal GME funding, we assigned a wage index based on the hospital's Medicare identification number. For funding recipients that did not have a Medicare identification number, we assigned a wage index based on their core-based statistical area and state. We assigned a cost-of-living adjustment factor based on recipients' state.

¹⁵Using the survey of state Medicaid directors, we requested data on the amount spent and number of FTE residents or resident positions supported by funding recipient. However, of the 45 state Medicaid agencies that made Medicaid payments for GME training in 2015, 21 were not able to provide data on the number of FTE residents or resident counts.

¹⁶We interviewed experts from the American Hospital Association, American Association of Teaching Health Centers, Association of American Medical Colleges, American Board of Family Medicine, George Washington University's Health Workforce Institute, the RAND Corporation, and a private consultant to GME training programs. We selected these experts and organizations based on relevance of their published or other work to our reporting objective.

¹⁷We performed a structured search of over 40 reference databases, including MEDLINE®, ProQuest, EBSCO, and Academic OneFile, for studies published on this topic from January 2000 through May 2016.

teaching hospitals to CMS. To assess the reliability of these data, we reviewed documentation about how the data were collected and verified, and we checked the data for obvious errors. We found the data to be sufficiently reliable for the purposes of our reporting objective. We also interviewed officials from three Medicare Administrative Contractors (MAC) selected based on the high percentage of new teaching hospitals in the MAC's geographic jurisdiction.¹⁸ We asked the MAC officials about their role and responsibilities in reviewing and auditing teaching hospitals' GME costs that are reported annually to CMS.

To examine the extent to which the federal government collects information needed to understand its investment in GME training, we reviewed, where available, public laws, regulations, agency guidance, reporting forms and instructions, and performance reports concerning the five federal programs that fund GME training. We interviewed officials from HHS's Office of the Assistant Secretary for Planning and Evaluation, CMS, HRSA, and VA about their reporting requirements, program management and oversight responsibilities, and program evaluation and performance measurement activities.¹⁹ We compared the information that agencies collect to the leading practices we derived from the Government Performance and Results Act of 1993 (GPRA) and the GPRA Modernization Act of 2010 (GPRAMA) and Federal Standards for Internal

¹⁸Since 2006, CMS has used regional contractors called MACs to process claims for health care items and services submitted by enrolled Medicare providers and suppliers. Among other things, MACs are responsible for processing, paying, and auditing Medicare claims. We selected MACs that had greater than 10 percent of all new teaching hospitals located within their geographic jurisdiction in 2015.

¹⁹Program evaluations assess how well a program is working and typically examine achievement of program objectives. Performance measurement is the ongoing monitoring and reporting of program accomplishments, particularly progress toward pre-established goals. Performance measures may address the type or level of program activities conducted (process), the direct products and services delivered by a program (outputs), or the results of those products and services (outcomes).

Controls to determine whether agencies collected information needed to understand the federal investment in GME training.²⁰

We conducted this performance audit from March 2016 to March 2018 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

GME Training

Following medical school, GME training provides the clinical training required for a physician to be eligible for licensure and board certification to practice medicine independently in the United States. Physicians pursue GME training within a variety of specialties or subspecialties. Initially, these physicians, known as residents, go through GME training for a specialty—such as internal medicine, family medicine, pediatrics, anesthesiology, radiology, or general surgery. Of the specialties, family medicine, internal medicine, and pediatrics are generally considered primary care specialties. However, a resident who trained in a primary care specialty may not ultimately practice as a primary care physician. Some residents may choose to subspecialize and seek additional GME training. For example, a resident who completed an internal medicine GME training program may decide to subspecialize in cardiology. The

²⁰See Pub. L. No. 103-62, 107 Stat. 285 (1993); Pub. L. No. 111-352, 124 Stat. 3866 (2011). We previously reported that principles derived from the performance planning and reporting framework put in place by GPRA and GPRAMA can serve as leading practices within an agency. For example, see GAO, *Nuclear Regulatory Commission: Regulatory Fee-Setting Calculations Need Greater Transparency*, [GAO-17-232](#) (Washington, D.C.: Feb. 2, 2017). See also GAO, *Standards for Internal Control in the Federal Government*, [GAO-14-704G](#) (Washington, D.C.: September 2014). Internal control is a process effected by an entity's oversight body, management, and other personnel that provides reasonable assurance that the objectives of an entity will be achieved.

percentage of residents who later subspecialize varies based on specialty type.²¹

To operate and maintain GME training programs, teaching sites, including hospitals, health centers, medical schools, and other settings, incur medical education costs that can generally be categorized into two groups—direct costs and indirect costs. Direct costs include, for example, residents' salaries and benefits; compensation for faculty who supervise the residents; and overhead costs. Indirect costs are the portion of higher patient care costs that teaching sites are thought to incur as a result of training residents, such as increased diagnostic testing and procedures performed. (See table 1.)

²¹According to a 2008 study, among the primary care specialties, 5 percent of family medicine residents end up subspecializing, compared with 55 and 39 percent of internal medicine and pediatric residents, respectively. See E. Salsberg, et al., "U.S. Residency Training Before and After the 1997 Balanced Budget Act," *JAMA*, vol. 300, no. 10 (2008): 1174-1180.

Table 1: Examples of Direct and Indirect Graduate Medical Education Costs that Teaching Sites May Incur

Direct costs	Indirect costs
Resident salaries and fringe benefits	Additional diagnostic tests or procedures ordered by residents
Faculty compensation	Longer time for residents to interpret test results
Administrative staff compensation	Higher staff-to-patient ratios
Building space	Increased record keeping to maintain educational records for residents
Medical malpractice insurance premiums	Less efficient provision of services by residents in lieu of more experienced clinicians
Accreditation and licensing fees	Additional costs of resident supervision, especially during the resident's first year of residency
Resident recruitment costs	Greater use of highly specialized or emerging technologies, such as burn units or transplant units
Faculty development	
Program funded conferences and travel fees	
Subsidies for parking, housing, or meals	
Education materials, such as equipment, technology software, and textbooks	

Source: GAO. | GAO-18-240

While they may generate costs, residents may also produce financial benefits for a teaching site. Teaching sites may incur lower personnel costs because residents perform services at lower pay than more experienced clinicians or other health care professionals. And, residents may have more flexibility to work long or irregular hours. For example, residents can provide on-call services in lieu of fully trained physicians at a much lower cost to the teaching site. Residents may also increase the efficiency and productivity of faculty with whom they work by, for example, enabling the faculty to increase the number of patient services for which they can bill.

Funding of GME Training through Federal Programs and State Medicaid Agencies

Within the federal government, funding of GME training is fragmented. Most federal GME funding is provided through five programs—Medicare GME payments, Medicaid GME payments, HRSA's CHGME and THCGME payment programs, and the VA's physician GME training programs. For most of the programs, the funding is formula-driven and essentially guaranteed if eligibility requirements are met. Each program uses a different methodology to determine the amount of payments to funding recipients, though there are some similarities between programs.

GME training programs generally must be accredited by an independent organization in order to receive federal funding.²²

Medicare GME Payments

Medicare—a federally financed program that provides health insurance coverage to people age 65 and older, certain individuals with disabilities, and those with end-stage renal disease—pays for GME training. It does so through two mechanisms—Direct Graduate Medical Education (DGME) payments and Indirect Medical Education (IME) payments—both of which are formula-based payments set by statute.²³ These payments are made to reflect Medicare’s “share” of the costs associated with providing GME training.

Medicare DGME payments are made to cover a hospital’s direct costs associated with GME training, such as stipends, supervisory physician salaries, and administrative costs. The payments are the product of a hospital’s weighted 3-year average number of FTE residents, subject to a cap; a per resident amount (PRA); and the hospital’s Medicare patient load—the portion of a hospital’s total inpatient bed days that were paid for by Medicare.²⁴ In part to constrain spending, the Balanced Budget Act of 1997 capped, for most hospitals, the number of FTE residents that hospitals may count for DGME and IME payment at the number of FTE residents in place in 1996.²⁵

²²GME training programs generally are accredited by the Accreditation Council for Graduate Medical Education or the American Osteopathic Association. Accreditors evaluate a program’s ability to adequately train residents by considering residents’ hours and activities, the program’s facilities, faculty-to-resident ratios, and other factors.

²³See 42 U.S.C. § 1395ww(d)(5)(B) (IME payment formula) and 42 U.S.C. § 1395ww(h) (DGME payment formula).

²⁴Residents who have completed their initial residency period—the minimum number of years required for board eligibility in a specialty or subspecialty—are weighted at 0.5 of an FTE for Medicare DGME payments. The length of residency training varies depending on the specialty chosen. Generally, residency programs are 3 years for primary care fields, such as family medicine, general internal medicine, and general pediatrics, and 5 years for general surgery. Fellowship training to become a subspecialist can add 1 or more years of training.

²⁵Pub. L. No. 105-33, §§ 4621(b), 4623, 111 Stat. 251, 476-78 (1997). If a hospital did not have GME training in 1996, its resident FTE caps are set 5 years after it begins training residents in its first new program, based in part on the highest number of FTE residents who train during that fifth year. Some exceptions have allowed hospitals to increase their FTE resident cap from their 1996 base year. For example, the Medicare, Medicaid, and SCHIP Balanced Budget Refinement Act of 1999 allowed rural teaching hospitals to increase their FTE resident cap up to 130 percent of their 1996 cap.

Rather than reimburse teaching hospitals for actual direct costs incurred each year from training residents, DGME payments are calculated using a PRA. A hospital's PRA is based on its direct costs and its number of FTE residents when the PRA was set in a base year, which is fiscal year 1984 for most hospitals, and is adjusted annually for inflation. Congress set a base year for calculating DGME costs that would incentivize local providers to keep down their costs and for local communities to assume a greater role in the costs of medical education.²⁶ After fiscal year 1984, for hospitals that did not previously have any approved residency programs or did not participate in Medicare but began doing so, a PRA for the hospital is established using direct costs the hospital reported that it incurred on its cost report during its base year, which is generally the first cost reporting year it began training residents.²⁷ In general, each hospital has two separate PRAs—a primary care PRA and a nonprimary care PRA—whereby teaching hospitals receive slightly higher payments for residents training in primary care specialties.²⁸

Medicare IME payments, which are made to cover a hospital's indirect costs associated with GME training, are an add-on to the hospital's Medicare reimbursement for each discharge.²⁹ IME payments are not

²⁶Consolidated Omnibus Budget Reconciliation Act of 1985, Pub. L. No. 99-272, § 9202, 100 Stat. 82, 171 (1986). Earlier HHS determined that, while the federal government would share substantially in these costs, any increase above the level of reimbursement in that base year was not necessary for the efficient delivery of health services to Medicare beneficiaries. 50 Fed. Reg. 21026, (May 21, 1985).

²⁷If residents were not training in the first month of the first cost reporting year that the hospital began training residents, its base year is the second year that it trained residents. The PRA for these new teaching hospitals is the lesser amount of either the hospital's actual costs per resident or the updated weighted average value of PRAs for all teaching hospitals located in the same core-based statistical area.

²⁸Under Medicare DGME payment rules, primary care specialties include family medicine, general internal medicine, general pediatrics, preventive medicine, geriatric medicine, and osteopathic general practice.

²⁹Under the inpatient prospective payment system, hospitals are paid a predetermined amount based on the clinical classification of the discharge from the hospital. CMS calculates these payments through a series of adjustments applied to separate national base payment rates covering operating and capital expenses. Because Medicare's inpatient reimbursement method, the Inpatient Prospective Payment System, does not typically provide separate reimbursement for additional testing, teaching hospitals may be disadvantaged by training residents under this reimbursement method. To adjust for this possibility, Medicare IME payments are provided as a percentage increase to Medicare's inpatient reimbursement (a sum reimbursement amount of separate operating and capital components) for each discharge based on a statutory payment formula.

based on teaching hospitals' actual indirect costs. Rather, the adjustment is based on the number of FTE residents per hospital bed, referred to as the resident-to-bed ratio, and a statistically estimated factor that represents the incremental patient care cost due to providing GME training.³⁰

Federal and State Medicaid GME Payments

Medicaid is a joint federal-state program that finances health care coverage for low-income and medically needy individuals. While there is no federal requirement for state Medicaid programs to fund GME training, states may elect to recognize GME training costs as a component of the overall costs incurred by hospitals.³¹ And, payment for these expenses is shared by the federal government through federal matching funds. GME training costs may be reimbursed as an add-on adjustment to the state's payment rates to eligible providers or as an enhanced payment made as a lump sum supplemental to the initial payment rate.³²

CHGME Payment Program

Because children's hospitals treat very few Medicare patients and consequently receive few GME payments from Medicare, the CHGME Payment Program was created in 1999 and reauthorized through fiscal year 2018 to support pediatric and pediatric subspecialty GME training in freestanding children's hospitals.³³ Unlike Medicare GME, which is a

³⁰The current adjustment factor for the operating component of Medicare reimbursement per discharge represents a 5.5 percent increase in IME payment for every 10 percent increase in the resident-to-bed ratio. Hospitals also receive an IME adjustment to the capital component of their Medicare reimbursement per discharge, which is based on a slightly different formula that uses the resident-to-average daily census ratio.

³¹Payment for overall costs incurred by hospitals within the Medicaid program, including GME training costs, is limited by the Medicaid Upper Payment Limit. This limit is based on a reasonable estimate of the aggregate amount Medicare would pay for comparable services. See 42 C.F.R. § 447.272.

³²States pay qualified health providers for covered services provided to Medicaid beneficiaries and obtain federal matching funds for the federal share of these payments. In addition to these regular payments, which are generally based on claims submitted by the providers for services rendered, states also make and obtain federal matching funds for supplemental payments to certain providers—particularly hospitals—to help offset remaining costs of care for Medicaid patients and, in some cases, uninsured patients. Unlike regular Medicaid payments, supplemental payments typically are not made on the basis of claims. Rather, they generally consist of large lump sum payments made on a monthly, quarterly, or yearly basis.

³³Pub. L. No. 106-129, § 4, 113 Stat. 1653, 1671-74 (1999) (codified, as amended, at 42 U.S.C. § 256e). The CHGME program provides payments to freestanding children's hospitals as well other types of freestanding hospitals that predominantly treat individuals under age 18, such as psychiatric hospitals and rehabilitation hospitals.

mandatory spending program, the CHGME program relies on discretionary spending. And, the total amount of payments available to each hospital varies from year to year depending on the total amount of funding made available from annual appropriations and the total number of hospitals that participate. The CHGME program makes both DGME and IME payments where one-third of program funds are allocated for DGME payments and two-thirds for IME payments. Both payments are calculated using formulas similar to Medicare. For example, the program's DGME payments are based, in part, on the number of FTE residents, subject to a cap, and an updated national standardized PRA.³⁴ And, the IME payment is based, in part, on an estimated factor that represents the incremental patient care cost due to providing GME training, rather than the hospital's actual indirect costs.

THCGME Program

The THCGME program was created under the Patient Protection and Affordable Care Act and reauthorized through fiscal year 2017 to increase the number of primary care residents who trained in community-based, ambulatory patient settings.³⁵ HRSA awards funds to eligible teaching health centers for the purpose of covering both direct and indirect GME costs of new or expanded community-based primary care residency programs. HHS established an interim annual payment rate of \$150,000 per resident until it establishes formulas for determining the payments.³⁶

³⁴Like Medicare DGME payments, the FTE resident counts used to calculate CHGME payments are weighted by a factor of 1.0 for residents in their initial residency period and 0.5 for trainees beyond their initial residency period.

³⁵Eligible community-based ambulatory settings can include federally qualified health centers; federally qualified health center Look-Alikes; community mental health clinics; rural health clinics; health centers operated by the Indian Health Service, an Indian tribe, or a tribal organization; or entities receiving funds under title X of the Public Health Service Act. A GME consortium that includes a health center that operates one or more primary care residency programs may also be eligible. Under the THCGME program, primary care residency programs include family medicine, internal medicine, pediatrics, internal medicine-pediatrics, obstetrics and gynecology, psychiatry, general dentistry, pediatric dentistry, and geriatrics.

³⁶HHS is required to establish formulas for determining separate DGME and IME payment formulas for the THCGME program. 42 U.S.C. § 256h. As of November 2017, HHS had not established rules on such payment formulas and instead has been making payments using the interim payment amount it established under the statute. With respect to the DGME and IME formulas, the statute provides that DGME payments shall be equal to the product of the updated national PRA and the average number of FTE residents in teaching health centers' residency programs. And, in determining the IME payment formula, the statute provides that HHS shall evaluate the indirect teaching costs relative to supporting primary care residency programs in qualified teaching health centers and assure that the aggregate payments for indirect and direct costs do not exceed the total amount appropriated for the THCGME program in a given fiscal year.

However, the payment rate for THCGME recipients may fluctuate over time, depending on available appropriations, the number of eligible applicants, and the number of FTE residents supported. THCGME awards can supplement GME payments from other federal sources, including Medicare, Medicaid, and CHGME, but recipients generally cannot use funds to pay for the same portion of resident time that they used to count toward funding in these other GME programs.

VA GME Program

GME training is a statutory requirement of VA to enhance the nationwide supply of health care professionals and assists VA in the recruitment and retention of staff at its medical facilities. Nearly all of VA's GME training is conducted through academic affiliations with medical schools and teaching hospitals where residents from those institutions do clinical rotations at VA medical facilities.

VA provides financial support for GME training at its facilities in two ways—disbursement payments to its academic affiliates and educational support payments for its VA medical facilities. VA reimburses academic affiliates through disbursement agreements to cover the costs of stipends and benefits for the period of time that a resident serves in a VA medical facility.³⁷ Reimbursement is based on the number of FTE residents completing a VA rotation and the approved per diem rate of the academic affiliates' stipend and benefit costs by residents' postgraduate year level of training.³⁸ In addition, VA allocates a portion of VA-wide funding for educational support using a formula that accounts for the number of FTE resident positions and a per resident cost factor. According to VA officials, the funding is used to pay for compensation of faculty and other staff,

³⁷VA cannot pay for an affiliate's other GME costs, including the costs of GME staff salaries and benefits, administrative costs, and other GME costs through a disbursement agreement. However, VA can pay for some GME costs, such as accreditation fees, through a health care services contract with the affiliate.

Disbursement agreements are a payroll mechanism where VA allows a disbursing agent to centrally administer salary payments and fringe benefits for residents assigned to a VA medical facility.

³⁸A resident's postgraduate year level of training is assigned by a review of, for example, the number of years of specialty board training required for board certification in a given specialty training program; number of applicable years already completed by the resident in the particular specialty training program; and the number of training years accredited by the appropriate accrediting body.

overhead costs, and other costs necessary to host and manage the GME training at VA medical facilities.³⁹

Federal Oversight of GME Funding

Like its funding, federal oversight of programs that fund GME training is fragmented. Federal agencies are responsible for the management and oversight of their respective GME training program or programs. For Medicare, CMS uses regional contractors—MACs—to process and audit payments for health care items and services submitted by enrolled Medicare providers on their annual cost report, including Medicare DGME and IME payments. For example, MACs audit the number of FTE residents that hospitals report on their annual cost report by reviewing relevant rotation schedules. Hospitals claiming reimbursement for GME training are also required to submit Intern and Resident Information System (IRIS) files that provide data on each resident that the hospital trained, including the resident's specialty type, postgraduate year, and proportion of time spent on rotation at each training site.

CMS is responsible for broad oversight of the Medicaid program, while states are responsible for the daily administration of their individual Medicaid programs, including program integrity activities. In its broad oversight role, CMS develops guidance and provides assistance to the states. However, state Medicaid programs are not required to make GME payments, and CMS has not established requirements or guidance specifically related to Medicaid GME payments. Instead, CMS reviews states' Medicaid payments to providers, including GME payments, as part of its review of Medicaid state plans.⁴⁰

HRSA is responsible for the management and oversight of the CHGME and THCGME programs. Specifically, it is responsible for determining applicants' program eligibility, making payments, and auditing those

³⁹Although the payment amount is based on the number of FTE physician residents, the funds are intended to cover medical centers' costs of training all types of health professionals, including nurses and other health professionals.

⁴⁰Each state must have in effect a Medicaid state plan that is approved by CMS. Among other things, a state Medicaid plan establishes criteria and requirements for providers to be eligible to receive payments and must be approved by CMS in order for the state to receive matching funds for the federal share of Medicaid payments it makes. Overall reimbursement made to hospitals is subject to applicable statutory and regulatory reporting and program integrity requirements within the Medicaid program, including the upper payment limit requirements.

payments. HRSA is also responsible for collecting information about, and reporting on, the performance of the CHGME and THCGME programs.

Oversight of GME training at VA medical facilities is shared between the VA medical facilities and their academic affiliates. Through affiliation agreements, academic affiliates provide for the central administration of residents' stipends and benefits.⁴¹ Academic affiliates are also responsible for the overall quality of the GME training program, monitoring all resident educational activities, obtaining and maintaining accreditation, developing educational objectives and curriculum, selecting residents, creating resident rotation schedules, and submitting residents' schedules of educational activities to VA for reimbursement. VA has the responsibility of overseeing and managing clinical training in VA medical facilities, and must ensure that there are sufficient patient care opportunities, educational infrastructure, and qualified teaching physicians to accommodate trainees from the affiliates. Each VA medical facility must also track the educational activities of all residents, including the amount of time the resident spent training at its facility.

⁴¹See 38 U.S.C. § 7406. The affiliation agreement is the required legal document that enables an affiliation relationship with a sponsoring institution of GME training programs, which ensures compliance with accrediting body institutional requirements and may promote common standards for patient care, medical education, research, and staff appointments. It delineates the duties of the VA and the affiliated institution, with respect to clinical education of the trainees.

Federal Agencies and State Medicaid Agencies Spent Over \$16.3 Billion on GME Training in 2015, and the Amount Spent Per FTE Resident Varied

Federal agencies and state Medicaid agencies spent over \$16.3 billion on GME training in 2015 to support direct and indirect costs of training. The amount spent per FTE resident varied across programs, and the largest variation across payment recipients and regions was within Medicare due to variation in the values of factors used to calculate Medicare payment amounts. Almost half of participants received payments from more than one program, and the designs of federal programs may reduce the potential for duplicate payments.

Federal Agencies and State Medicaid Agencies Spent Over \$16 Billion on GME Training in 2015 to Support Direct and Indirect Costs of Training

Federal agencies and state Medicaid agencies spent over \$16.3 billion on GME training in 2015 through five federal programs and 45 state Medicaid agencies. Of this, the federal government spent \$14.5 billion through Medicare, Medicaid, VA, the CHGME program, and the THCGME program. (See table 2). Most spending on GME training came from Medicare, accounting for 71 percent of federal spending, with over \$10.3 billion in payments to teaching hospitals. Medicaid spending accounted for 16 percent of federal spending on GME training, or \$2.4 billion. These federal Medicaid funds matched an additional \$1.8 billion that Medicaid agencies in 45 states spent on GME training in 2015. (For information about state Medicaid agency and other non-federal sources of funding on GME training, see appendix I.)

Table 2: Federal Spending on Graduate Medical Education (GME) Training and Number of Recipients and Residents Supported by Program, 2015

Program	Total GME spending (dollars)	Percent of total spending (percent)	Number of funding recipients	Number of FTE residents supported
Medicare GME Payments	10,334,518,025	71	1,226	87,980 ^a
<i>Direct GME payments</i>	3,709,961,953	n/a	n/a	n/a
<i>Indirect Medical Education payments</i>	6,624,556,072	n/a	n/a	n/a
Medicaid GME Payments (federal share)	2,350,654,201	16	1,148	74,202 ^b
VA Physician GME Program	1,499,021,193	10	167 ^c	10,367
<i>Resident Salaries & Benefits</i>	660,399,034	n/a	n/a	n/a
<i>Educational Support</i>	838,622,159	n/a	n/a	n/a
Children's Hospitals GME Payment Program	248,599,622	2	56	4,568
Teaching Health Center GME Program	76,320,578 ^d	1	39	630
Total^e	14,509,113,619	100	1,657^f	n/a

Legend: n/a = not applicable

Sources: GAO analysis of Centers for Medicare & Medicaid Services (CMS), Health Resources and Services Administration (HRSA), and Department of Veterans Affairs (VA) data; and GAO web-based survey administered to state Medicaid agencies. | GAO-18-240

^aThis number is the 3-year rolling average of full-time equivalent (FTE) residents that is used to calculate Medicare Direct GME payments. CMS counts the number of FTEs to calculate Indirect Medical Education (IME) payments slightly differently from Direct GME payments—there were 88,416 FTE residents funded through Medicare IME payments.

^bOf the 45 states that reported paying for GME training through Medicaid, 21 were unable to provide FTE information, and thus were not included in this calculation. Medicaid spending in these states represents 19 percent of total (federal and state) Medicaid spending on GME training.

^cThe number of VA recipients represents academic affiliates, which were reimbursed by 125 VA medical centers for the time that residents spend training at VA facilities. VA medical centers received educational support payments for costs of training residents.

^dIn fiscal year 2015, the Teaching Health Center GME Program spent \$119,632,825 to support training that occurred from October 2014 to June 2016. We calculated the amount that HRSA spent on GME training that occurred from October 2014 through September 2015 (i.e., the federal fiscal year), by multiplying the payment rates by the number of FTEs and weighting the resulting totals by the number of months included in the time period of interest.

^eNumbers do not total due to rounding unless otherwise specified.

^fRecipients can participate in more than one federal program, so the total number of recipients is not a sum of the number of recipients of each individual program.

These payments supported both direct and indirect costs associated with GME training, though data were limited for some programs. We calculated that about one-third of Medicare payments were made to cover

the direct costs of GME training.⁴² Similarly, HRSA reported that one-third of CHGME payments were made to cover direct costs. For the VA GME program, we calculated that 44 percent of payments were made to academic affiliates to reimburse them for resident salaries and benefits, a category of direct costs.⁴³ HRSA does not separate payments for direct costs from those for indirect costs under the THCGME program. And, the data we received from state Medicaid directors did not separate them, though 8 of 45 states specifically reported paying providers for indirect costs in addition to direct costs.

Providers in all 50 states and the District of Columbia received payments for training GME residents, but some regions received a notably higher amount compared to others. In particular, federal agencies spent \$5.47 billion (\$97 per-capita) in the Northeast region, which represents 38 percent of total federal spending, compared with the West where federal agencies spent \$1.83 billion (\$24 per-capita or 13 percent of total federal spending). (See table 3). State Medicaid agencies in the Northeast also spent significantly more on GME training than did agencies in other regions. Agencies in the Northeast spent \$1 billion (\$18 per-capita), whereas agencies in the West spent \$120 million (\$2 per-capita). Notably, New York accounted for about half (48 percent) of nationwide state Medicaid agency spending on GME and 86 percent of spending in the Northeast. Overall, GME spending was somewhat more concentrated in the Northeast than was the number of GME residents; in a May 2017 study, we found that 31 percent of GME residents were located in the Northeast.⁴⁴ The Northeast was the only region for which the percentage of the GME spending in the region was higher than the percentage of GME residents.

⁴²Direct costs of GME include salaries for residents, faculty, and residency program directors. Indirect costs of GME training include undefined higher cost of health care as a result of educating physicians.

⁴³VA can also contract with its academic affiliates to provide resident supervision and teaching time. We did not obtain data from VA about the amount it spent on faculty salaries through this contracting mechanism, so the VA GME spending figures presented are likely an underestimate of VA spending when compared to the costs included in other programs' totals.

⁴⁴[GAO-17-411](#).

Table 3: Federal and State Spending on Graduate Medical Education (GME) Resident Training by Region, 2015

Region	Federal spending		State Medicaid agency spending		GME residents ^b
	Total (in billions of dollars)	Per-capita ^a (dollars)	Total (in billions of dollars)	Per-capita ^a (dollars)	
Northeast	5.47 (38 percent)	97	1.00 (55 percent)	18	38,951 (31 percent)
South	3.74 (26 percent)	31	0.42 (23 percent)	3	37,967 (30 percent)
Midwest	3.47 (24 percent)	51	0.29 (16 percent)	4	31,056 (24 percent)
West	1.83 (13 percent)	24	0.11 (6 percent)	2	19,604 (15 percent)
Total^c	14.51 (100 percent)	45	1.82 (100 percent)	6	127,578 (100 percent)

Sources: GAO analysis of Centers for Medicare & Medicaid Services, Health Resources and Services Administration, and Department of Veterans Affairs data; GAO web-based survey administered to state Medicaid agencies; and U.S. Census Bureau region definitions and data. | GAO-18-240

^aTo calculate per-capita spending, we divided the total spending by the 2015 regional population estimated by the U.S. Census Bureau.

^bSee GAO, *Physician Workforce: Locations and Types of Graduate Training Were Largely Unchanged, and Federal Efforts May Not Be Sufficient to Meet Needs*, [GAO-17-411](#) (Washington, D.C.: May 25, 2017)

^cNumbers do not total due to rounding.

Available data show that almost all spending on GME training (99 percent) went to recipients located in urban areas.⁴⁵ However, it is likely that more than 1 percent of spending was used to support training in rural areas; data limitations in HHS and state Medicaid agency data preclude calculation of the amount of spending on GME training in rural areas. The data we received from HHS listed only the direct recipient of the payments, such as a hospital or a medical school, which can arrange rotations at other teaching sites that may be located in rural areas.⁴⁶

⁴⁵We similarly reported in May 2017 that 99 percent of residents in GME programs trained in urban areas. See [GAO-17-411](#).

⁴⁶Because of these limitations, we were also unable to trace the amount of spending that was used to support training by setting, including nonhospital settings. However, nearly half (42 percent) of Medicare GME payment recipients reported that residents rotate to a nonhospital setting. Of the 45 states that made Medicaid payments for GME funding, 7 reported that they pay other types of teaching sites in addition to hospitals, such as teaching health centers or medical schools.

Data limitations also preclude calculation of the overall amount of spending on GME resident training in specific specialties, such as primary care.⁴⁷ With data that were available, we found:

- Of the 10,367 FTE residents that VA funded, 53 percent were training in a primary care specialty. We also estimated that 52 percent of VA's spending supported primary care training.⁴⁸
- The THCGME program is intended to train residents in primary care, with 100 percent of the \$76.3 million used to support 630 primary care residency positions.
- HRSA reported that 43 percent of the 11,667 trainees supported by CHGME funds trained in general pediatrics or combined pediatrics programs. HRSA did not report how much it spent on primary care training, or the number of FTE residents training in primary care specialties.
- Of the 87,980 FTE residents that Medicare funded, 44 percent were denoted as primary care residents. However, Medicare is likely supporting more residency positions than these data indicate, and these residents are unlikely to be training in primary care. The program counts each resident pursuing additional training, such as a resident training in a subspecialty, as half of an FTE when calculating DGME payments.

⁴⁷Physicians training in primary care specialties may not ultimately practice as primary care physicians when they complete this training, as some will likely seek additional GME training to subspecialize.

⁴⁸For the purposes of this analysis, we defined primary care specialties as internal medicine, family medicine, geriatric medicine, and preventative medicine, including subspecialties of these specialties. To estimate total VA spending on primary care training, we multiplied the number of FTE residents training in a primary care specialty at each VA medical facility by the average per FTE resident payment to the facility's affiliates.

The Amount Paid Per FTE Resident Varied Across Programs, and the Largest Variation Across Recipients and Regions Was within Medicare

We found that in 2015, the average amount that a program paid per FTE resident ranged from \$34,814 for Medicaid GME payments to \$137,491 for the VA GME program.⁴⁹ (See table 4.) Programs use different methods to calculate how much to pay providers on a per resident basis, thus payment amounts are not comparable across programs. For example, Congress appropriated funding for the THCGME program for each of the fiscal years 2011 through 2017 and eligible entities received the same amount per FTE resident. In contrast, Medicare GME payments to eligible entities are determined according to formulas that take many factors into account, including the share of a hospital's patients that are covered under Medicare. Consequently, the amount that Medicare pays recipients varies widely based on variation in the values of factors used to calculate payments. Nationwide, hospitals received \$116,997 on average from Medicare for each FTE resident, and the middle 50 percent of hospitals received between \$85,478 and \$150,610.

⁴⁹We adjusted all of the payments per FTE resident by the 2015 CMS wage index to account for geographic differences in the cost of labor.

The average Medicaid GME payment amount reflects combined federal and state spending. Of the 45 states that pay for GME training through Medicaid, 21 were unable to provide FTE resident information, and thus were not included in this calculation. Medicaid spending in these states represents 19 percent of total (federal and state) Medicaid spending on GME training.

Per FTE spending for the VA program combines the amount that VA reimburses affiliates for a resident's salary and benefits and the amount that VA medical facilities receive to support educational activities at the VA level.

Table 4: Graduate Medical Education (GME) Program Spending per Full-Time Equivalent (FTE) Resident, Adjusted and Unadjusted for Geographic Differences in the Cost of Labor by Federal Program, 2015

Program		Average (dollars)	5th percentile (dollars)	25th percentile (dollars)	50th percentile (median, dollars)	75th percentile (dollars)	95th percentile (dollars)
VA Physician GME Program	Adjusted	137,491	103,157	127,814	141,636	151,597	162,921
	Unadjusted	137,250 ^a	100,098	131,335	140,722	148,972	159,859
Teaching Health Center GME Program	Adjusted	131,573	106,615	113,127	132,016	146,070	159,256
	Unadjusted	136,250	136,250	136,250	136,250	136,250	136,250
Medicare GME Payments	Adjusted	116,997	13,597	85,478	122,646	150,610	194,617
	Unadjusted	117,674	7,766	85,446	121,147	151,784	203,639
Children's Hospitals GME Payment Program	Adjusted	50,736	28,273	45,044	50,814	57,054	65,860
	Unadjusted	51,778	21,765	44,155	51,512	60,093	82,351
Medicaid GME Payments ^b (Federal and State)	Adjusted	34,814	3,586	10,645	21,401	44,630	116,545
	Unadjusted	36,540	3,606	10,801	22,092	47,029	125,000

Sources: GAO analysis of Centers for Medicare & Medicaid Services (CMS), Health Resources and Services Administration, and Department of Veterans Affairs (VA) data; and GAO web-based survey administered to state Medicaid agencies. | GAO-18-240

Notes: We adjusted payments per FTE resident using the CMS wage index so that amounts are comparable across recipients in geographic areas with different labor costs.

^aThese VA payment amounts are calculated at the VA medical facility level, and combine the payments from VA medical facilities to their affiliates and the amount that VA spends to support other educational expenses. Without adjusting for geographic differences in the cost of labor, the VA reimbursed its academic affiliates at an average rate of \$56,996 per FTE resident, and its educational support payments to VA medical facilities was based on a rate of \$80,900 per FTE resident.

^bTwenty-one of the 45 states that pay for GME training through Medicaid were unable to provide FTE information, and thus were not included in this calculation. Medicaid spending in these states represents 19 percent of total federal and state Medicaid spending on GME training.

Given the wide variation in overall Medicare per FTE resident payment amounts by hospital, we examined variation among regions and states.

- Regionally, the average total Medicare per FTE resident payment ranged from \$127,503 in the Midwest to \$87,172 in the West. (See table 5.)

Table 5: Average Medicare Graduate Medical Education (GME) Payment Per Full-Time Equivalent (FTE) Resident by Region, 2015

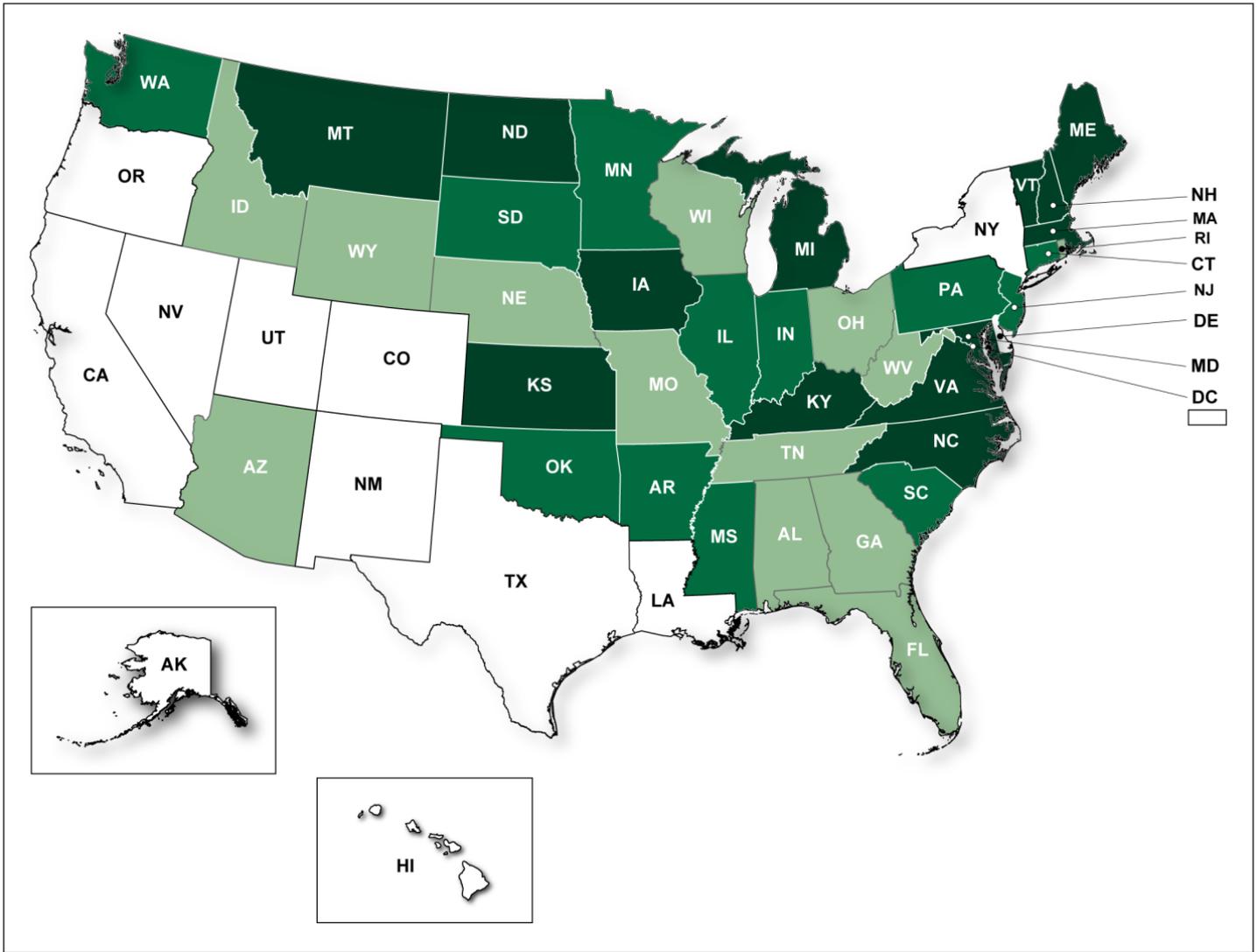
Region	Average Direct GME payment per FTE resident (dollars)	Average Indirect Medical Education payment per FTE resident (dollars)	Average total payment per FTE resident (dollars)
Northeast	50,476	75,579	123,264
South	44,420	84,382	121,915
Midwest	49,700	83,356	127,503
West	33,397	59,219	87,172
National	45,189	77,157	116,997

Sources: GAO analysis of Centers for Medicare & Medicaid Services (CMS) data and U.S. Census Bureau region definitions. | GAO-18-240

Note: We adjusted payments per FTE resident using the CMS wage index so that amounts are comparable across recipients in geographic areas with different labor costs.

- Across individual states, the average total Medicare per FTE resident payment amount ranged from \$65,672 in California to \$170,591 in New Hampshire. (See fig. 1.)

Figure 1: Average Medicare Payment per Full-Time Equivalent Graduate Medical Education Resident, 2015



Source: GAO analysis of Centers for Medicare & Medicaid Services data; Map Resources (map). | GAO-18-240

Note: We adjusted payments per-full-time equivalent resident using the Centers for Medicare & Medicaid Services wage index so that amounts are comparable across recipients in geographic areas with different labor costs.

Some of this variation is due to significant variation in the values of certain factors used to calculate Medicare DGME payments—specifically, the PRA and Medicare patient load. (See table 6.)

- The Medicare PRA varies among recipients and across regions, though to a lesser degree than the overall per FTE resident payment. For example, the average PRA for the middle 50 percent of primary care residents ranged from \$87,962 to \$117,144 per FTE resident, compared to \$85,478 to \$150,610 for the overall per FTE resident payment. The PRA also varied by region and, as with the overall payment amounts, the average PRA was lowest in the West. However, in contrast to the nationwide average per FTE resident payment, which was highest in the Midwest, the recipients in the Northeast had the highest average PRA.
- The Medicare patient load also varies across regions, which affects DGME payments. Medicare DGME payment recipients in the West reported an average Medicare patient load of 24 percent, which is significantly lower than the 34 to 36 percent reported in other regions.

Table 6: Factors Used to Calculate the Medicare Direct Graduate Medical Education (GME) Payment by Region, 2015

Region	Average Medicare primary care PRA (dollars) ^a	Average Medicare non-primary care PRA (dollars)	Average Medicare Patient Load (percent) ^b
Northeast	110,991	106,697	34
South	102,780	103,049	34
Midwest	107,317	104,468	36
West	90,373	87,991	24
National	103,570	101,735	32

Sources: GAO analysis of Centers for Medicare & Medicaid Services (CMS) data; and U.S. Census Bureau region definitions. | GAO-18-240

Notes: We adjusted the Medicare per resident amount (PRA) using the CMS wage index so that amounts are comparable across recipients in geographic areas with different labor costs.

^aThe Medicare PRA is a set number for each hospital that reflects the direct costs of training a GME resident. For many hospitals, the PRA was set based on the costs of training a resident in fiscal year 1984 and adjusted for inflation annually. A hospital's primary care resident PRA is generally larger than its non-primary care PRA.

^bThe Medicare patient load is the ratio of the hospital's Medicare inpatient days to total inpatient days in the hospital.

A hospital's Medicare patient load also affects Medicare IME payments per FTE resident. A hospital's IME payment is calculated by increasing Medicare's payments for inpatient services to a hospital by an IME

adjustment factor. Therefore, a hospital that received more Medicare payments for inpatient services will receive a larger IME payment.

About Half of GME Program Participants Received Payments from More than One Program

Over half (51 percent) of providers that participated in any of the five GME programs received payments from more than one federal program. For example, 69 percent of providers that participated in Medicare also participated in another program, and 84 percent of CHGME awardees participated in another program. However, in each case, these programs provided most of these recipients' total funding (74 percent and 66 percent respectively). In contrast, recipients of Medicaid or VA payments also generally participated in another program, but received only 22 percent and 10 percent of their total funding for GME training through Medicaid and VA, respectively. (See table 7.)

Table 7: Provider Participation in Multiple Graduate Medical Education (GME) Programs and Average Percentage of Total Funding Received by Program, 2015

Program	Percent of providers that received payments from another GME program (percent)	Average percent of providers' total funding from program among providers that participated in more than one GME program (percent)
Medicare GME Payments	69	74
Medicaid GME Payments (federal and state)	70	22
VA Physician GME Program	75 ^a	10
Children's Hospitals GME Payment Program	84	66
Overall	51	n/a

Legend: n/a = not applicable

Sources: GAO analysis of Centers for Medicare & Medicaid Services, Health Resources and Services Administration and Department of Veterans Affairs (VA) data; and GAO web-based survey administered to state Medicaid agencies. | GAO-18-240

^aThis analysis includes only hospitals that VA reimbursed for the time that residents spent training at a VA medical center.

Though the high portion of providers that receive payments from multiple sources creates the potential for providers to receive duplicate payments, this risk of duplication is reduced by the programs' designs.

- The CHGME program was established for children's hospitals because they did not traditionally receive significant Medicare GME payments.
- The THCGME program provides payments to outpatient facilities, whereas residency training has been, in general, hospital based.

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- VA only pays for residents' time spent training at a VA medical facility, and not for time residents spent training in non-VA settings that may receive other federal payments for GME training.
 - Medicare adjusts all DGME payments by the ratio of a hospital's patients covered under Medicare.
 - CMS has not established requirements or guidance specifically related to Medicaid GME payments, including how the payments are to be calculated.⁵⁰ However, 10 states adjust payments by the ratio of a teaching site's patients covered under Medicaid.

GME Training Costs Vary by Residency Program Characteristics, and Teaching Sites Face Challenges in Measuring These Costs

GME training costs vary by program characteristics, such as size, type, training setting, and age, and some training costs are more prone to variation than others. Challenges exist in measuring and comparing GME training costs due to a lack of standard cost methodologies across teaching sites and some training costs being difficult to measure. Further, little is known about how GME training costs relate to federal GME funding.

GME Training Costs Vary by Program Size, Type, Setting, Age, and Location

According to literature we reviewed and experts we interviewed, GME training costs vary by residency program characteristic, and some costs, such as faculty teaching time, are more prone to variation than others. Specifically, variation in training costs can be explained by one or more of the following program characteristics:

- **Program size:** Larger residency programs may be more cost efficient than smaller ones in that fixed costs, such as infrastructure and program administration, can be spread out over a larger number of residents. Therefore, adding another resident increases variable costs, but lowers per resident fixed costs.⁵¹

⁵⁰However, overall reimbursement made to hospitals, including for GME training costs, is subject to applicable statutory and regulatory requirements within the Medicaid program.

⁵¹See T. J. Nasca et al., "Minimum Instructional and Program-Specific Administrative Costs of Educating Residents in Internal Medicine," *Archives of Internal Medicine*, vol. 161 (2001).

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- **Type of Specialty:** Residency training in some specialties costs more than others, and accreditation requirements are one of several factors driving this variation. For example, compared to internal medicine programs, accreditation standards for family medicine programs require more hours of faculty involvement and higher faculty-to-resident ratios. Therefore, these residency programs may incur higher per resident costs. The complexity of a specialty program also affects its training costs—for example, subspecialty programs, such as vascular surgery or gastroenterology, require additional GME training or specialized equipment and will thus incur more training costs. In addition, costs can be affected by variation in faculty compensation. According to a 2013 analysis of available data on residency training costs, the median compensation for attending physicians in academic health centers ranged from \$163,319 for family medicine to \$336,136 for radiation oncology.⁵² Further, malpractice insurance premium costs can vary based on the degree of surgical involvement, with primary care specialties having the lowest premium costs and general surgery physicians the highest.⁵³
 - **Type of Training Setting:** GME training in outpatient settings, such as community-based clinics, is considered less efficient and more expensive than in inpatient hospital settings, according to reviewed literature and experts we interviewed.⁵⁴ One reason for this may be differences in the models of teaching used in each of these settings. According to one group of experts we interviewed, residents in inpatient settings are part of teams that do rounds together, where much of the teaching time involves one clinical teacher and a team of residents, nurses, and other affiliated professionals. This method of teaching may not be feasible in outpatient settings where teaching is more often provided on a more expensive one-to-one basis. Outpatient settings, particularly smaller ones, may also have to incur more fixed costs relative to inpatient settings that may have more facility space and other resources in place to meet accreditation requirements.

⁵²See B. O. Wynn, R. Smalley, K. M. Cordasco, *Does it Cost More to Train Residents or to Replace Them? A Look at the Costs and Benefits of Operating Graduate Medical Education Programs* (Santa Monica, Ca.: RAND Corporation 2013), 11.

⁵³See Wynn et al., *Does it Cost More*, 9.

⁵⁴See Nasca et al., “Minimum Program Requirements,” 763; and R. Ben-Ari et al., “The Costs of Training Internal Medicine Residents in the United States,” *The American Journal of Medicine*, vol. 127, no.10 (2014).

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- **Location:** Geographic location also drives the variation in training costs. For example, resident salaries vary based on general salary patterns across the United States. According to one group of experts we interviewed, there is a range of compensation packages for residents, and base salaries can vary from \$35,000 to \$55,000 per year. Malpractice insurance may also vary by geographic location. Further, rural training sites may incur higher costs because their training may have to utilize multiple training sites—such as community hospitals or rural health clinics—in order to meet accreditation requirements for resident rotations and patient case-mix. The added administrative work of coordinating with other sites to provide these resources can be a challenge.
 - **Age of the program:** Newer residency programs may have higher costs than older, more established programs.⁵⁵ According to some GME experts we interviewed, the first year a teaching site operates a residency program is more expensive because new programs may be smaller and cannot spread out fixed costs. In addition, it can be expensive for a new GME program to meet accreditation requirements, such as required infrastructure and minimum faculty.

Studies estimating GME training costs show these costs vary by program characteristics. For example, we identified 10 studies that estimated GME training costs; however, these studies were not comparable because they focused on discrete programs with different characteristics, utilized different methodologies, were conducted at different points in time, and did not examine the same cost elements. Further, these studies are not generalizable due to limitations in study methodology, such as small sample sizes. And, given the age of some of these studies, they may not be reflective of current GME training costs. Across the 10 studies we reviewed, estimates of costs ranged from \$35,164 to \$226,331 per resident. (See table 8.)

⁵⁵See M. Regenstein et al., “The Cost of Residency Training in Teaching Health Centers,” *The New England Journal of Medicine*, vol. 375, iss. 7 (2016).

Table 8: Summary of Identified Studies that Estimate Graduate Medical Education (GME) Training Costs, 2000-2016

Authors	Year of publication	Methodology	Type of program specialty	Type of training setting	Program or study size (residents)	Total per resident cost (dollars)
Regenstein et al. ^a	2016	Estimated training costs in teaching health centers using a self-developed instrument based on 2013-2014 data from 26 programs	Primary care	Outpatient	Not specified	157,602 ^b
Ben-Ari et al. ^c	2014	Estimated direct training costs of internal medicine residency programs in 2013, including costs associated with meeting accreditation requirements	Internal medicine	Inpatient	24	208,320
					160	181,737
				Outpatient	24	224,668
					160	198,085
Turner et al. ^d	2014	Estimated direct costs for an anesthesiology resident by clinical training year in 2011-2012	Anesthesiology	Not specified	Not specified	Year 1: 65,951 Year 2: 71,492 Year 3: 75,636
Wynn et al. ^e	2013	Summarized direct GME training costs across 1,141 hospitals using 2008 Medicare cost report data ^f	Multiple specialties	Inpatient and outpatient	97,577 ^g	141,240
			75 percent or more ^h	153,162		
Pauwels et al. ^l	2006	Analyzed survey data from family medicine residency programs to estimate total GME training costs in 2003	Family medicine	Inpatient and outpatient	22 ^j	44,812 ^k
Zeidel et al. ^l	2005	Estimated GME training costs to a university department of medicine in 2003	Internal medicine	Inpatient and outpatient	141 ^m	35,164 ⁿ
Blewett et al. ^o	2001	Estimated average direct GME training costs across 117 residency programs in Minnesota in fiscal year 1997	Multiple specialties	Inpatient and outpatient	2002 ^m	130,843

Authors	Year of publication	Methodology	Type of program specialty	Type of training setting	Program or study size (residents)	Total per resident cost (dollars)
Nasca et al. ^p	2001	Estimated the minimum instructional and administrative costs of training internal medicine residents using 1998 accreditation requirements	Internal medicine	Inpatient	21	94,730
					126	70,279
				Outpatient	21	102,107
					126	77,656
Duffy et al. ^q	2000	Estimated average direct and indirect costs incurred by 46 non-academic health center teaching hospitals in Maryland in 1994	Multiple specialties	Inpatient and outpatient	44 ^r	226,331
Magen et al. ^s	2000	Surveyed clinical faculty and analyzed the budget of a psychiatric residency program to identify psychiatric training costs from 1996-1997	Psychiatry	Inpatient and outpatient	20	78,159

Source: GAO analysis. | GAO-18-240

^aM. Regenstein et al., "The Cost of Residency Training in Teaching Health Centers," *The New England Journal of Medicine*, vol. 375, iss. 7 (2016).

^bTotal per resident cost estimate was for fiscal year 2017, and reflected academic year 2013-2014 data that was adjusted by factors related to cost of living and program maturity. Total per resident cost estimate was the median net cost after factoring in expenses and revenues.

^cR. Ben-Ari et al., "The Costs of Training Internal Medicine Residents in the United States," *The American Journal of Medicine*, vol. 127, no.10 (2014).

^dB. Turner et al., "Clinical Revenue Directly Attributable to Anesthesiology Residents," *Journal of Graduate Medical Education*, vol. 6, iss. 2 (2014).

^eB. O. Wynn, R. Smalley, K. M. Cordasco, *Does it Cost More to Train Residents or to Replace Them? A Look at the Costs and Benefits of Operating Graduate Medical Education Programs* (Santa Monica, Ca.: RAND Corporation 2013), 50.

^fMedicare cost report data included 1,141 hospitals that reported residents during the reporting period.

^gNumber of reported residents across all hospitals included in the study.

^hPercentage of weighted residents in primary care programs across 1,141 hospitals.

ⁱJ. Pauwels et al., "Three-year Trends in the Costs of Residency Training in Family Medicine," *Family Medicine*, vol. 38, no. 6 (2006).

^jAverage number of full-time equivalent residents across studied programs.

^kTotal per resident cost excludes resident salary and benefits and malpractice insurance, and includes GME revenue, with the exception of Medicaid GME revenue.

^lM. L. Zeidel et al., "Estimating the Cost to Departments of Medicine of Training Residents and Fellows: A Collaborative Analysis," *The American Journal of Medicine*, vol. 118, no. 5 (2005).

^mNumber of full-time equivalent residents included in the study.

ⁿTotal per resident cost excludes resident salary and benefits and does not reflect GME revenue.

^oL.A. Blewett et al., "Measuring the Direct Costs of Graduate Medical Education Training in Minnesota," *Academic Medicine*, vol. 76, no. 5 (2001).

^pT. J. Nasca et al., "Minimum Instructional and Program-Specific Administrative Costs of Educating Residents in Internal Medicine," *Archives of Internal Medicine*, vol. 161 (2001).

^qS. Q. Duffy et al., "Graduate Medical Education Costs in Nonacademic Health Center Teaching Hospitals: Evidence from Maryland," *Medical Care Research and Review*, vol. 57, no. 1 (2000).

^rMean number of residents and interns across studied hospitals.

^sJ. Magen et al., "The Cost of Residency Training in Psychiatry," *Academic Psychiatry*, vol. 24, iss. 4 (2000).

The Medicare cost reports that hospitals submit annually to CMS, though they have certain limitations, also suggest variability in residency training costs. For example, according to the cost reports, in 2015, direct costs varied from \$56,998 to \$333,565 per resident (excluding outliers).⁵⁶ (See table 9.) However, these costs are limited to direct GME costs specified in Medicare guidance, and they have other limitations due to their collection and reporting.

Table 9: Teaching Hospitals' Direct Costs of Graduate Medical Education (GME) Training Programs Reported on Their Annual Medicare Cost Reports, 2015

	Direct GME training costs per FTE resident (dollars) ^a
5th percentile	56,998
25th percentile	110,789
Median	151,851
75th percentile	206,406
95th percentile	333,565

Source: GAO analysis of Centers for Medicare & Medicaid Services (CMS) data. | GAO-18-240

Note: Hospitals that were below the 5th and above the 95th percentiles were excluded as outliers. We adjusted direct GME training costs per full-time equivalent (FTE) using the CMS wage index to account for geographic differences in the cost of labor.

^aIn addition to inconsistencies in how data is collected for Medicare cost reports, the data do not include the revenue impact and actual indirect costs associated with training residents, and they are generally not reviewed or audited except when teaching sites establish their base year per resident amount.

⁵⁶Hospitals that were below the 5th and above the 95th percentiles were excluded as outliers. We adjusted GME training costs per FTE using the CMS wage index so that costs are comparable across teaching hospitals.

Challenges Exist in Measuring and Comparing GME Training Costs and Little is Known about their Relationship to Federal GME Funding

We found that there is no standard method or tool across teaching sites for identifying and capturing GME training costs. One expert told us that, therefore, the reporting of costs depends on how each teaching site, and the individuals at each site, are tracking and defining those costs. Another group of experts who conducted a study to estimate GME training costs in teaching health centers told us they were unable to identify a common instrument and had to develop their own instrument to standardize costs.

According to literature we reviewed and experts we interviewed, Medicare GME guidance for reporting training costs is not always clear, and differences in how teaching sites define costs can lead to inconsistent measurement. One expert told us that Medicare GME payment rules are subject to interpretation, and thus there is variation between teaching sites in how costs are reported on Medicare cost reports. Other GME experts told us that many teaching health center residency programs rely on in-kind benefits, such as building space donated by organizations, but health centers vary in how they account for the costs of these benefits. Some teaching health centers will score them as in-kind contributions, others will provide a square footage cost amount, and others may not track and report these costs at all. While one group of experts suggested there be national guidelines to ensure all teaching sites are using the same rules to define and report costs, one expert cautioned that a common tool would make it impossible to reflect the unique characteristics of each program.

Factors specific to teaching sites may affect how they identify their training costs. The varying relationships and financial arrangements between the teaching site, its partners, and its faculty affect how it allocates and reports training costs. For example, a teaching site may have various educational partners, such as medical schools and community-based training sites, and be affiliated with multiple hospitals, each of which tracks costs differently. Teaching sites differ in how they share training costs with these partners. In addition, faculty arrangements vary. For example, in some cases faculty are employees of the teaching site and in other cases, faculty bill for their services independently. Moreover, facilities vary in the experience of their personnel responsible for identifying GME training costs. For example, program directors may not have the financial experience needed to identify costs, and some teaching sites may use outside consultants to identify costs. Turnover in the staff responsible for tracking costs, lack of communication between program staff and the accounting departments, or a change in ownership

of the teaching site may add to the challenge of accurately identifying costs.

According to studies we reviewed and experts we interviewed, some GME training costs are difficult to accurately identify and measure. For example:

- **Faculty Costs:** Faculty responsibilities are spread out across education, research, administrative, and patient care activities, and the time spent in each activity is not always clear. The only allowable faculty costs on Medicare cost reports are those for education-related activities, such as the clinical supervision of residents. For example, if a faculty member performs a procedure while doing rounds with residents, the teaching site must determine how much of that time was for patient care and how much was for education. However, making this determination can be challenging for teaching sites. One group of experts told us that while most teaching sites have a formula to calculate these education costs, they are most likely an undercount. However, another expert said that officials preparing the cost reports are not systematically splitting faculty time between education and patient-care activities and are most likely guessing.
- **Facility Costs:** MAC officials told us that facility costs that hospitals report on their cost reports should be allocated based on square footage, building depreciation, and utility costs, but there is some variation in how teaching sites calculate their square footage. Further, as previously described, donated building space may not be accurately identified by teaching sites. Experts who conducted a study to estimate teaching health center program costs told us that several centers in their study were not accustomed to thinking of donated space as a residency program expense.
- **Indirect Medical Education Costs:** There is not a clear and consistent definition of the indirect medical education costs, and there may be variability in these costs. Furthermore, there is little incentive for teaching sites to accurately identify these costs because Medicare does not require them for purposes of determining IME payments, according to one reviewed study.⁵⁷ As a result, it is unclear what indirect costs the Medicare IME payment adjustment is meant to cover. Additionally, experts told us that it is difficult to measure the extent to which costs associated with the unique services that

⁵⁷See National Academy of Medicine, *Graduate Medical Education*, 87.

teaching sites provide, such as stand-by services or their role as a safety net provider, are attributable to GME training.

- **Resident benefits for teaching site costs and productivity:** The benefits that residents provide can generate cost savings and revenue for the teaching site, yet the extent of these benefits can be difficult to calculate. According to one study we reviewed, the value that residents provide cannot be measured directly; rather, the value is reflected in the teaching site's patient care costs and on the clinical productivity of attending physicians.⁵⁸ One expert we interviewed said that identifying when residents move from a cost to a financial benefit is complicated and depends, for example, on a resident's year of training and residency program requirements. Also, the value of resident services can vary by specialty. For example, residents in general surgery or internal medicine provide more on-call services than residents in dermatology or radiation oncology.⁵⁹ Although the cost savings and revenue generated by residents has an effect on the net costs of GME training, it is typically not accounted for when estimating costs.

In addition to these challenges, federal agencies do not systematically collect and standardize cost information at the national level, according to literature we reviewed and experts we interviewed. For example, a HRSA study identified training costs in teaching health centers, but the study only captured costs over one year and did not include all THCGME programs. Further, in addition to inconsistencies in how teaching sites collect data for Medicare cost reports, the data do not include the revenue impact and actual indirect costs associated with training residents and cannot be broken down by specialty programs. In addition, they are not a comprehensive source of training costs because they are limited to teaching sites that received Medicare GME payments. It does not include other teaching sites, such as medical schools, teaching health centers, and teaching hospitals that may have only received other federal funding for GME training, such as VA GME payments. Finally, because Medicare cost report data are not generally used to calculate GME payments, they are not reviewed or audited by contractors except when new teaching sites establish their base year PRA.⁶⁰

⁵⁸See Wynn et al., *Does it Cost More*, 3.

⁵⁹See Wynn et al., *Does it Cost More*, 20.

⁶⁰However, according to MAC officials and some experts we interviewed, the direct costs that are reported are generally complete.

Further, teaching sites may not have accurately reported costs used to calculate Medicare DGME payments. According to experts we interviewed, at the time that most teaching sites established the base year PRAs used to calculate DGME payments, teaching site accounting practices and their varying financial relationships with affiliated education partners may have led them to over-report or under-report their costs.⁶¹ As a result, there is variation in sites' PRAs, which may not reflect actual variation in direct costs.⁶² To identify how the PRA compares to reported direct training costs, we compared teaching site PRAs with the direct training costs that they reported for 2015 (though reported costs may not accurately reflect all GME training costs, as previously noted). For teaching sites in the median range, their Medicare DGME payment covered 67 percent of their reported direct training costs in 2015. However, we found wide variation across teaching sites—the PRA ranged from 31 to 157 percent (excluding outliers) of teaching sites' reported direct costs.⁶³ (See table 10.)

⁶¹A teaching site's Medicare DGME payment is based on GME training costs that teaching sites reported in a base year, which is fiscal year 1984 for most teaching sites.

⁶²Congress implemented a floor and ceiling on the PRA and therefore there are limits to how much PRAs can vary. Specifically, Congress established a PRA floor for hospitals that had a PRA that was less than 70 percent of the national average PRA in fiscal year 2001, adjusted for inflation thereafter within certain limits. The floor was raised to 85 percent of the national PRA for fiscal year 2002. And, between fiscal years 2000 through 2002, and 2004 through 2013, hospitals that had a PRA greater than 140 percent of the national average PRA did not have their PRA adjusted for inflation. For fiscal year 2003, hospitals that had a PRA greater than 140 percent of the national average PRA, had their PRA inflation adjustment reduced. A group of experts also told us that, although the PRA has received these and other adjustments for inflation, it has not kept pace with the increase in GME training costs.

⁶³The Medicare PRA is a measure of hospitals' allowable costs of GME for a base year divided by the number of FTE residents in that base year.

Table 10: Teaching Hospitals' per Resident Amounts (PRA) Used to Calculate their Medicare Direct Graduate Medical Education (GME) Payments, Relative to their Reported Training Costs, 2015

	Average Medicare PRA as a percentage of direct GME training costs (percent)^a
5th percentile	31
25th percentile	50
Median	67
75th percentile	89
95th percentile	157

Sources: GAO analysis of Centers for Medicare & Medicaid Services data. | GAO-18-240

Notes: Hospitals that were below the 5th and above the 95th percentiles were excluded as outliers. The PRA is based on GME costs that a hospital incurred in a base year, which is fiscal year 1984 for most hospitals and is adjusted annually for inflation.

^aIn general, each hospital has two separate PRAs—a primary care PRA and a nonprimary care PRA—whereby teaching hospitals receive slightly higher payments for residents training in primary care specialties. We calculated the average of each hospital's primary care and nonprimary care PRAs. In addition to inconsistencies in how data is collected for Medicare cost reports, the data do not include the revenue impact and actual indirect costs associated with training residents, and it is generally not reviewed or audited except when teaching sites establish their base year PRA.

In addition to the challenges of identifying and comparing costs, little is known about their relationship to federal GME funding. Some studies have analyzed federal GME funding relative to GME training costs but do not consistently indicate whether federal payments accurately reflect training costs. For example, both the Medicare Payment Advisory Commission and HHS found that the Medicare IME payment adjustment exceeds the actual indirect costs that teaching sites incur from operating

GME programs.⁶⁴ The studies recommended modifying the IME payment adjustment. However, another study found that indirect medical education costs and other costs, such as stand-by services, add to patient care costs in teaching hospitals, and concluded that a reduction in the Medicare IME payment adjustment could result in insufficient Medicare payments to cover these costs.⁶⁵ Other studies found that federal funding is lower than actual program costs. For example, one study estimated the per resident training cost in teaching health centers in fiscal year 2017 to be \$157,602, compared to the \$95,000 per resident that was being provided in federal funding.⁶⁶ Another study found that their average \$183,138 per resident cost estimate for internal medicine programs of 120 residents exceeded Medicare DGME payments in 2012 by approximately \$160,000 per resident, and noted that other sources of funding, including Medicare IME payments, subsidized training costs.⁶⁷

The relationship between training costs and federal GME funding is complicated by the nature of how most GME payments are made. For example, with respect to Medicare GME payments, the largest source of federal GME funding, payments are not based on actual costs, and there are no reporting requirements for how teaching sites use the payments. Specifically, teaching sites distribute these payments depending on their needs and the needs of their affiliates, making it difficult to understand the relationship between GME funding and training costs.

⁶⁴In 2009 and 2010, the Medicare Payment Advisory Commission reported that only 40 to 45 percent of IME payments can be analytically justified to cover the higher inpatient costs for Medicare inpatients. Furthermore, the current 5.5 percent adjustment is set at more than twice the estimated empirical relationship between teaching intensity and Medicare cost per case, resulting in approximately \$3.5 billion to teaching hospitals with little accountability for the use of these funds. See Medicare Payment Advisory Commission, *Report to the Congress: Improving Incentives in the Medicare Program, June 2009* (Washington, D.C., June 15, 2009), 13; and Medicare Payment Advisory Commission, *Report to the Congress: Aligning Incentives in Medicare, June 2010* (Washington, D.C.: June 15, 2010), 109. A 2011 HHS-sponsored study examined the statistical basis of the IME payment adjustment using 2006 hospital cost data and found that the impact of IME on Medicare costs is smaller than the 5.5 percent adjustment under current law. The study's results suggest that a much smaller IME adjustment would adequately compensate hospitals for their indirect medical education costs. See N. X. Nguyen, et al., "Indirect Medical Education and Disproportionate Share Adjustments to Medicare Inpatient Payment Rates," *Medicare & Medicaid Research Review*, vol. 1, no. 4 (2011).

⁶⁵See L. Koenig, et al., "Estimating the Mission-Related Costs of Teaching Hospitals," *Health Affairs*, vol. 22, no.6 (2003).

⁶⁶See Regenstein et al., "The Cost of Residency Training," 612-613.

⁶⁷See Ben-Ari et al., "The Costs of Training," 1022.

Information the Federal Government Collects to Manage Programs Is Not Sufficient to Comprehensively Understand Its Investment in GME Training

Agencies generally collect information to manage their respective programs, ensure the accuracy of payments, and reduce the potential for duplicative payments within or across federal programs that fund GME training. However, HHS does not have sufficient information available to comprehensively evaluate the federal programs that fund GME training, identify gaps between federal GME programs' results and physician workforce needs, and make or recommend to Congress changes in order to improve the efficient and effective use of federal funds.

Each Federal Agency Generally Collects Information Needed to Manage Its Respective Program and Ensure Payment Accuracy

Federal agencies generally collect information to manage their respective programs and ensure the accuracy of payments. To manage their programs, agencies use information, such as the total number of FTE residents and training costs, to calculate payments. For example, VA medical facilities use information that academic affiliates report about the costs of their resident salaries and benefits to set payment rates used to reimburse the affiliates. And, information about individual residents is used to verify that recipients accurately reported, according to resident counting rules, the number of FTE residents used to calculate payments. For example, MACs use IRIS data about residents' number of years completed in all types of GME training programs to verify that residents who have completed their initial residency period were only counted as half (50 percent) when determining the DGME payment amount. (For a summary of the information that agencies collect for each of the five programs we reviewed, see appendix II. See table 11 for a summary of how agencies use the collected information.)

Table 11: Summary of How Federal Agencies Use Information Collected about Funding for Graduate Medical Education (GME) Training

How information is used	CMS		VA	HRSA	
	Medicare GME Payments	Medicaid GME Payments	VA Physician GME Program	Children's Hospital GME Payment Program	Teaching Health Center GME Program
Calculate Payments					
To establish payment rates, such as a per resident amount or per diem reimbursement rate	√	*	√	√	√
To establish a base year full-time equivalent (FTE) resident cap or make adjustments to the cap	√	—	n/a	√	n/a
To determine the number of allowable FTE residents in which GME payments are based	√	—	√	√	√
Audit Payments					
To verify FTE resident counts were accurately reported by funding recipients	√	—	√	√	√
To identify potential duplicate payments between recipients (i.e., two or more recipients claimed the same FTEs)	√	—	†	√	√
To identify potential duplicate payments with other federal programs (i.e., a funding recipient claimed the same FTEs for more than one federal program)	—	—	†	√	√
Monitor Program Performance					
To evaluate the output of GME training programs supported, such as the number and type of residents supported	—	—	√	√	√
To evaluate outcomes of GME training programs supported, such as where residents plan or did go on to practice	—	—	√	√	√
To evaluate the educational experiences of residents supported.	—	—	√	√	√

Legend:

√ = Agency used information to conduct the program management or oversight activity.

* = State Medicaid agencies report to CMS the aggregate amount of GME supplemental payments that they make, which is used by CMS to calculate the amount of federal Medicaid matching funds for each state. Otherwise, CMS generally does not collect or use information on supported GME training, payment accuracy, or potential duplication. Instead, states establish and administer Medicaid GME payment policies, and CMS reviews states' overall Medicaid payments, including GME payments, as part of its review of state Medicaid plans.

— = Agency did not use information to conduct the program management or oversight activity.

n/a = not applicable

† = VA does not have processes in place to identify duplicate payments with other federal programs. However, through its use of information, such as total FTE resident counts and rotation schedules, it verifies that recipients' time spent within the VA medical facility and not in another medical facility that may have received funds from another federal source.

Source: GAO analysis of information from the Centers for Medicare & Medicaid Services (CMS), Health Resources and Services Administration (HRSA), and Department of Veterans Affairs (VA). | GAO-18-240

In contrast to the other programs, states establish and administer Medicaid GME payment policies and CMS generally collects limited information about states' Medicaid GME payments. CMS does not use this information except to determine the amount of federal matching funds for each state. While state Medicaid agencies report the aggregate amount of GME supplemental payments they make to CMS, there are no federal requirements that states or teaching institutions report information about supplemental payments at the provider level, the aggregate or provider-level amount of add-on adjustments to the state's payment rates for GME training, or how these payments support GME training.⁶⁸ Rather, CMS officials said that states have the option to collect information about Medicaid GME payments. However, of the 45 state Medicaid agencies that reported on our survey that they paid for GME training, less than half (20 states) indicated that they require funding recipients to report any information related to Medicaid GME payments, such as the number or type of residents supported.

While the risk of duplication is reduced by each program's design, federal agencies also use the information collected to identify duplicative payments within and between most of the federal programs, with the exception of Medicaid. For example, IRIS data is used to identify whether more than one hospital claimed the same resident's time for purposes of Medicare GME payments. Also, according to HRSA officials, contractors conduct assessments of the FTE resident counts reported by recipients of CHGME or THCGME program funding to identify duplication with FTE residents reported for Medicare GME payments. For example, HRSA

⁶⁸CMS requires state Medicaid agencies to use the Form CMS-64 to report their aggregate Medicaid expenditures for all recipients through specified, standard categories of services, including the amount of expenditures on supplemental payments for GME training. For each category of service, the CMS-64 collects a state's total Medicaid expenditure as well as the federal share. Aggregate Form CMS-64 data are submitted by states to receive federal reimbursement for a share of their Medicaid spending. However, in a 2012 report, we found that the exact amount of Medicaid supplemental payments was unknown because state reporting was incomplete. In another 2012 report, we found that CMS lacked data on supplemental payments made to individual facilities. And, we proposed to Congress that it require the Administrator of CMS to improve state reporting of supplemental payments, including requiring annual reporting of payments made to individual facilities and other information the agency determines is necessary to oversee supplemental payments; clarify permissible methods for calculating supplemental payments; and require states to submit an annual independent audit verifying state compliance with permissible methods for calculating supplemental payments. See [GAO-12-694](#) and [GAO-13-48](#). As of December 2017, no legislation had been enacted. However, CMS has taken some actions administratively to understand how to improve its oversight of supplemental payments, which are underway.

officials told us that its combined academic years 2012-2013, 2013-2014, and 2014-2015 FTE assessment of the 59 teaching health centers in the THCGME program identified 6 centers, from 3 unique organizations, that had a combined total of 6.63 FTE residents that were duplicative with Medicare FTE resident claims, out of over 1,000 FTE residents reviewed over that 3-year time period. In addition, HRSA has worked with CMS to maintain data for this assessment. For example, at HRSA's request, CMS added a field to the cost reports to check whether any residents from a teaching health center rotated to the hospital and, if so, the number that rotated from a teaching health center. However, these agencies do not have procedures in place to identify potentially duplicative payments between their programs and Medicaid GME payments, which totaled \$2.3 billion in federal Medicaid spending in 2015.⁶⁹ There is no federal requirement that CMS identify potentially duplicative payments between Medicaid GME payments and other federal GME programs. And, without better data collected about Medicaid GME payments, there is limited information available to identify potentially duplicative payments between, for example, HRSA's GME programs and Medicaid GME payments.

HRSA and VA, which combined provided 13 percent of total federal GME funding in 2015, use the information collected for ongoing program performance measurement and program evaluation. HRSA evaluates the performance of its payment programs. To do so, HRSA collects information on program outcomes, such as whether supported residents received training in, or went on to practice in, a medically underserved area, a primary care setting, or rural area. HRSA uses these performance measures for ongoing evaluations, for internal and congressional reporting, and in its budget justification. In addition, HRSA is authorized to implement a quality bonus system for the CHGME program, which it plans to do by fiscal year 2019.⁷⁰ VA issues a survey to VA residents to assess, among other things, a resident's likelihood of considering a future

⁶⁹VA does not have processes in place to identify duplicate payments with other federal programs. However, through its use of information, such as total FTE resident counts and rotation schedules, it verifies that recipients only claimed residents' time spent within the VA medical facility and not in another medical facility that may have received funds from another federal source. Similarly, for the Medicare, CHGME, and THCGME payment programs, agencies use information collected about residents' rotation schedules to ensure that recipients only report residents' time spent in allowable settings and activities.

⁷⁰Federal law provides that, under the bonus system, HRSA will distribute payments to CHGME participating hospitals that meet standards specified by HRSA that may include a focus on, for example, interpersonal and communication skills, delivering patient-centered care, and practicing in integrated health systems. 42 U.S.C. § 256e(h)(6)(B).

employment opportunity at a VA medical facility. VA medical facilities are required to collect detailed records of residents' participation in assigned educational activities and they must evaluate each resident according to accrediting body requirements, such as patient care and medical knowledge. VA medical facilities are also required to produce an annual report on each GME training program that includes, among other things, the accreditation status of its GME training programs, its response to results of the resident satisfaction survey, and opportunities for improvement in residents' education.

CMS, however, does not use the information it collects for Medicare or Medicaid to evaluate the performance of these programs toward meeting physician workforce goals, even though they accounted for 87 percent of federal GME spending in 2015. As noted, Medicaid programs are administered at the state level. For Medicare, CMS officials said that their goal is to ensure hospitals are paid according to the GME statutes and regulations. It does not use information collected to evaluate the performance of Medicare GME payments, such as evaluating the number of residents supported by specialty or whether residents went on to practice in rural areas, primary care, or in medically underserved areas. The officials further noted that Medicare is an insurance program, and not among the health care workforce programs that are under the purview of HRSA. Although CMS officials told us that they coordinate with HRSA regarding Medicare GME payments, HRSA does not conduct research to inform GME policy related to CMS's GME payments. Also, in a 2015 report, we found that HHS lacks performance measures of Medicare GME payments that are directly aligned with areas of health care workforce needs identified in HRSA workforce projections.⁷¹

Agencies Do Not Collect Sufficient Information for HHS to Comprehensively Understand the Federal Investment in GME Training

Information that agencies collect is not always complete, especially information about Medicaid GME spending. As previously noted, CMS collects limited information about the amount of Medicaid GME payments and how these payments support GME training, such as the number or type of residents supported. In addition, agencies did not collect or use the following information, with some exceptions, to understand the federal investment in GME training:

⁷¹[GAO-16-17](#).

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- **Payment Amounts by Recipient Characteristics:** With the exception of HRSA's CHGME and THCGME programs, agencies do not collect information on payment amounts to training programs with specific characteristics, such as payment amounts by the type of training programs supported. This information would be needed, for example, to compare the payment rates of each program to the costs of training residents in the teaching sites supported.
 - **GME Costs and Revenues:** Agencies did not collect information about funding recipients' indirect costs or revenue generated from resident activities, with the exception of HRSA's THCGME program.⁷² Also as previously noted, the costs that hospitals are required to report annually on their Medicare cost report may not be complete or consistent, nor, according to CMS officials we interviewed, is this information audited and used except in limited cases. No information is collected by CMS about direct or indirect training costs incurred by recipients of Medicaid GME payments, and only eight state Medicaid agencies reported on our survey that they require recipients to report information about their direct costs.
 - **Output or Outcome Measures:** Unlike HRSA and VA, CMS does not collect information for the GME training programs that it supports through Medicaid to assess outputs or outcomes related to health care workforce planning. In addition, while CMS uses IRIS to collect information on the number and type of residents and their number of years completed in all types of GME training programs of residents supported by Medicare GME payments, it does not use it to understand the output of such spending or for health care workforce planning.⁷³ CMS also does not collect information on the outcomes associated with Medicare GME payments, such as whether residents who were supported by Medicare went on to practice primary care specialties or in rural or medically underserved areas. Further, although HRSA collects data about the outcomes of its CHGME and THCGME programs, this information is self-reported by funding

⁷²Experts who conducted the one-time THCGME cost evaluation said that they collected all possible costs associated with the GME programs, including those that may have otherwise been considered as indirect costs.

⁷³Hospitals that received Medicare GME payments previously submitted their IRIS files to their regional MAC, which limited the ability to centrally compare and access information across MACs. Because some residents rotate to hospitals outside of a MAC's jurisdiction, they did not have access to the rotation hospital's IRIS file from another MAC in order to verify that the hospital accurately reported its FTE resident count. To address this issue, CMS launched a new national IRIS database in April 2017.

recipients. However, HRSA officials told us that it has taken steps to validate the information reported. For example, it has started to collect residents' national provider identifiers for residents supported by the CHGME and THCGME programs, which is used to validate resident FTE counts and reported outcomes, such as whether residents went on to practice in primary care.

- **Quality Measures:** Agencies generally require that GME training programs be accredited in order to receive funding, and accrediting bodies are responsible for evaluating the educational quality of GME training programs. In addition, HRSA and VA collect some information about the learning experiences of residents in GME training programs supported, such as whether residents received training in certain topic areas. HHS and its advisory bodies have proposed tying federal funding to the performance of the programs.⁷⁴ For example, the President's budget proposals for fiscal years 2015, 2016, and 2017 for HHS proposed to Congress that it be allowed to set standards for teaching hospitals that receive Medicare GME payments to emphasize skills that promote high quality and high value in health care. In addition, the National Academy of Medicine has called for improved measures of the performance of GME training programs, and as of October 2017, it had an initiative to identify quality and other measures, such as residents' competency or patient outcomes of care provided by residents.⁷⁵

Information is also not always consistently collected within programs or standardized across programs. For example, VA medical facilities report information centrally to VA about their total payments to academic affiliates, but they inconsistently used accounting codes to report the total amount that they spent and did not report the amount they paid each academic affiliate, limiting the reliability of data VA collects on the total amount spent on GME. Additionally, VA medical facilities are required to report annually to VA their approved payment rates that each affiliate charges, but VA was unable to provide payment rate schedules for all affiliates in fiscal year 2015. Across all agencies, information about the number of FTE residents supported was collected at, and for, generally

⁷⁴See, for example, Medicare Payment Advisory Commission, *Report to the Congress*, (2010); and Council on Graduate Medical Education, *The Role of Graduate Medical Education in the New Health Care Paradigm*, Twenty Second Report (Rockville, Md.: November 2014); and National Academy of Medicine, *Graduate Medical Education*, 2014.

⁷⁵D. F. Weinstein, "Optimizing GME by Measuring Its Outcomes," *New England Journal of Medicine* vol. 377, no. 21 (2017): 2007-2009.

different points in time and through different reporting systems. (See table 12.) For example, HRSA generally collects FTE resident information through applications or supporting documentation prior to and at the end of a fiscal year, while VA collects such information in monthly or quarterly invoices throughout an academic year. And, CMS collects similar FTE resident information through cost reports and IRIS files based on each hospital's own cost reporting period, which can vary by hospital. In addition, the five federal programs do not consistently use the same unique identifiers for their funding recipients, such as a hospital's Medicare provider identification number, or individual residents supported, such as their national provider identifier, which limits the ability to link data across programs.⁷⁶

Table 12: Information that Agencies Collect about the Number and Type of Residents Supported by Federal Funding for Graduate Medical Education (GME) Training

Federal Program	Description of information collected	Reporting timeline
Centers for Medicare & Medicaid Services (CMS)		
Medicare GME Payments	On their cost report, hospitals must report the aggregate number of unweighted full-time equivalent (FTE) residents as well as the total number of weighted primary care and nonprimary care FTE residents. Hospitals must also submit their Intern and Resident Information System (IRIS) files, which contain data on each resident's specialty and number of years completed in all types of residency programs.	End of a hospital's cost reporting year, which can vary by hospital.
Medicaid GME Payments	CMS does not require state Medicaid agencies or teaching institutions to report any information about the number or characteristics of residents supported by Medicaid GME payments.	Not applicable
Health Resources and Services Administration (HRSA)		
Children's Hospitals GME Payment Program	Like Medicare teaching hospitals, most children's hospitals must submit, through Medicare cost reports, their aggregate number of unweighted FTE residents and weighted primary care and nonprimary care FTE residents. Children's hospitals must also submit IRIS files, which contain data on each resident. In addition, children's hospitals must submit, with their initial application, documentation of the aggregate number of eligible FTE residents in the most recently completed cost reporting period. And, in a reconciliation application, children's hospitals must report any changes in the number of FTE residents reported in their initial applications.	Cost reports and IRIS files are due at the end of a hospital's cost reporting period. Initial applications are due prior to the start of the fiscal year, and reconciliation applications are due in the third quarter of the fiscal year.

⁷⁶According to HRSA officials, the agency collects residents' national provider identifier for the CHGME and THCGME payment programs.

Federal Program	Description of information collected	Reporting timeline
Teaching Health Center GME Program	In their initial applications, applicants must submit documentation of the aggregate number of eligible FTE residents planned for the academic year as well as the number by postgraduate year level. Teaching health centers must also report, through a reconciliation tool, each resident's time paid for by the health center as opposed other sources.	Initial applications are due prior to the start of the fiscal year, and the reconciliation tool is must be submitted at the end of the fiscal year.
Department of Veterans Affairs (VA)		
VA Physician GME Program	Academic affiliates must submit the planned number of resident positions to rotate to VA by training program and post-graduate year level of training. And, they must submit monthly or quarterly invoices that detail, among other things, the number of VA-assigned residents for each training program by post-graduate year level.	The planned number of resident positions is due prior to the start of an academic year. Invoices are due quarterly or monthly throughout the academic year.

Source: GAO analysis of information from CMS, HRSA, and VA. | GAO-18-240

In some cases, data collection may vary across the various GME programs based on program requirements. Additionally, GME funding recipients may be required by law to report certain types of information for some programs, but not for others. For example, THCGME recipients are required to report on the number of residents trained at the health centers who completed their residency and care for vulnerable populations living in underserved areas. Relatedly, CHGME funding recipients are required to report the number of residents trained at the hospital who completed their residency training and care for children within the service area of the hospital or state in which the hospital is located. No similar requirements apply to Medicare GME recipients.

Because the information that agencies collect is not always complete or consistent, HHS does not have sufficient information available to comprehensively evaluate the federal programs that fund GME training. As a result, HHS cannot identify problems and make or recommend changes to Congress in order to improve the efficient and effective use of federal funds. Under leading practices we derived from GPRA and GPRAMA and federal standards for internal controls, agencies should identify and collect complete and reliable information needed to evaluate the performance of federal programs, while balancing the administrative costs of such efforts. In addition, agencies should use that information to monitor performance of programs in order to identify problems and make changes or recommendations to Congress for improvements. Improvements in the performance monitoring can enhance and sustain collaboration and reduce fragmentation within and across federal agencies that administer programs that fund GME training. However,

because of limitations with the information agencies collect, HHS does not have information available to comprehensively understand across all programs that fund GME training, for example, the:

1. Total amount that the federal government spends on GME training that includes total Medicaid GME spending and the total amount VA medical facilities paid to academic affiliates;
2. The amount the federal government paid each recipient for GME training, such as the amount paid to each VA academic affiliate;
3. Distribution of funding—that is, the amount of funding by GME training program characteristics, including program type;
4. Extent to which the net cost of training residents, including the variation in costs along different factors that were previously discussed, are accurately represented by formulas used to calculate payments;
5. Output and outcomes of GME training funded by federal programs—that is, how many and what type of residents the federal government supports, where those residents trained and went on to practice, and whether those residents will help address future health care workforce needs; and
6. Quality of GME training programs that are supported by the federal government, such as whether residents participated in certain educational activities or the practice readiness or competence of residents who completed GME training programs supported.

HHS's advisory bodies and stakeholders have made calls for improvements in the accountability and transparency of federal programs that fund GME training. For example, the Medicare Payment Advisory Commission recommended greater accountability and transparency for Medicare GME payments by making information about Medicare GME payments and teaching costs available to the public.⁷⁷ And, the National Academy of Medicine recommended that a GME Center within the Centers for Medicare & Medicaid Services be created to be responsible for, among other things, data collection and detailed reporting to ensure transparency in the distribution and use of Medicare GME payments.⁷⁸

⁷⁷See Medicare Payment Advisory Commission, *Report to the Congress* (2010).

⁷⁸See National Academy of Medicine, *Graduate Medical Education*, 2014.

Conclusions

The federal government is an important source of funds for GME training, and through its funding and workforce planning efforts, HHS, as the largest funder of GME training, has an important role in ensuring federal programs are meeting the nation's workforce needs. For HHS to carry out the comprehensive planning approach that we recommended in 2015, complete and consistent information on GME training is important. However, the information currently collected is insufficient for this purpose. For example, HHS lacks comprehensive information on the total number and specialty type of residents supported by all of the federal programs that fund GME training. But, HHS may have the opportunity to improve the information that its component agencies collect about how federal funding is used to support GME training to determine whether these programs are meeting these needs. New data collection efforts could potentially increase certain administrative costs for the federal government and providers. However, unless HHS collects more complete and consistent information, it will be limited in its ability to conduct comprehensive, ongoing evaluations of the federal government's \$14.5 billion annual investment in GME training. Such evaluations could allow HHS and other federal agencies to make programmatic changes, or make recommendations to Congress if legislative authority is needed, to improve the cost effectiveness of current federal funding. In addition, collecting more complete information could help HHS and other federal agencies better manage fragmentation in spending, management, and oversight of federal programs that fund GME training.

Recommendation for Executive Action

We are making the following two recommendations to HHS:

The Secretary of HHS should coordinate with federal agencies, including VA, that fund GME training to identify information needed to evaluate the performance of federal programs that fund GME training, including the extent to which these programs are efficient and cost-effective and are meeting the nation's health care workforce needs. (Recommendation 1)

The Secretary of HHS should coordinate with federal agencies to identify opportunities to improve the quality and consistency of the information collected within and across federal programs, and implement these improvements. (Recommendation 2)

Agency Comments and Our Evaluation

We provided a draft of this product to HHS and VA for comment. In its comments, reproduced in appendix III, HHS concurred with our two recommendations to identify and improve information collected to evaluate the performance of federal GME programs. HHS noted that the President's fiscal year 2019 budget for HHS, released on February 12, 2018, proposed consolidating federal spending from Medicare, Medicaid, and the CHGME Payment Program into a single grant program for teaching hospitals.⁷⁹ The proposed program would be jointly operated by CMS and HRSA and grant HHS authority to modify GME payment amounts based on criteria, including addressing health care workforce shortages. HHS stated that the program would allow the department to set priorities, reward performance, and align reporting metrics across its GME efforts. HHS indicated that, if the Congress adopts this proposal, it could work toward addressing both recommendations. It is important to note, however, that the recommendations in this report stand on their own and are separate from any efforts to modify how federal GME funds are distributed. Whether or not legislation is enacted to implement a consolidated federal GME grant program, HHS still needs to take actions to improve the information that agencies collect about how federal funding is used to support GME training. Such actions are important for HHS to assess the cost effectiveness of federal efforts to help meet the nation's physician workforce needs.

HHS also provided technical comments, which we incorporated as appropriate.

In its comments, reproduced in Appendix IV, VA said that it has significant relationships with other federal funders of GME, including HRSA. In addition, VA said it looks forward to further dialogue with other agencies to better share GME information. VA did not provide technical comments.

As agreed with your office, unless you publicly announce the contents of this report earlier, we plan no further distribution until 20 days from the report date. At that time, we will send copies of this report to the Secretary of Health and Human Services and the Secretary of Veterans Affairs. In addition, the report will be available at no charge on GAO's website at <http://www.gao.gov>.

⁷⁹See Office of Management and Budget, *Budget of the U.S. Government, Fiscal Year 2019* (Washington, D.C.: February 2018).

If you or your staff have any questions about this report, please contact me at (202) 512-7114 or cosgrovej@gao.gov. Contact points for our Office of Congressional Relations and Office of Public Affairs can be found on the last page of this report. Other major contributors to this report are listed in appendix V.

A handwritten signature in black ink, appearing to read 'James Cosgrove', with a large, stylized flourish at the end.

James Cosgrove
Director, Health Care

List of Requesters

The Honorable Greg Walden
Chairman
Committee on Energy and Commerce
House of Representatives

The Honorable Kevin Brady
Chairman
Committee on Ways and Means
House of Representatives

The Honorable Todd Young
United States Senate

The Honorable Gus M. Bilirakis
House of Representatives

The Honorable Diane Black
House of Representatives

The Honorable Marsha Blackburn
House of Representatives

The Honorable Vern Buchanan
House of Representatives

The Honorable Bill Flores
House of Representatives

The Honorable Morgan Griffith
House of Representatives

The Honorable Brett Guthrie
House of Representatives

The Honorable Bill Johnson
House of Representatives

The Honorable Sam Johnson
House of Representatives

The Honorable Mike Kelly
House of Representatives

The Honorable Robert E. Latta
House of Representatives

The Honorable Billy Long
House of Representatives

The Honorable Kenny Marchant
House of Representatives

The Honorable David McKinley
House of Representatives

The Honorable Cathy McMorris Rodgers
House of Representatives

The Honorable Kristi Noem
House of Representatives

The Honorable Devin Nunes
House of Representatives

The Honorable Pete Olson
House of Representatives

The Honorable Jim Renacci
House of Representatives

The Honorable Adrian Smith
House of Representatives

The Honorable Jason Smith
House of Representatives

The Honorable Fred Upton
House of Representatives

Appendix I: State Medicaid Agency and Other State and Private Sources of Graduate Medical Education Funding

In addition to federal funding, state governments—including state Medicaid agencies—and private sources also support graduate medical education (GME) training.¹ However, little is known about these other sources. Therefore, we analyzed Medicare cost report data to determine the extent to which teaching hospitals were operating above their FTE resident caps in 2015—an indication of the extent to which hospitals may receive other sources of GME funding, such as state or private sources. We also surveyed state Medicaid Directors from 50 states and the District of Columbia to collect information on how and the extent to which states paid for GME training through Medicaid payments, and the states' related reporting requirements and oversight activities.² As part of our interviews with experts from research and industry organizations, we asked about state and private sources of funding for GME training and what is known about the amount of such funding.

Teaching hospitals likely utilize state and private sources of funding, as well as other federal funding, to pay for residents beyond those paid for by Medicare—the largest federal funder of GME training. Hospitals have continued to add residents over time even though for most hospitals Medicare capped funding based on their number of full-time-equivalent (FTE) residents in 1996. In 2015, about half of teaching hospitals that receive Medicare GME payments had expanded their GME training programs above their Medicare FTE cap, and the extent to which they operate above their cap varied by hospital. We found that 47 percent of teaching hospitals were operating their GME training programs above their Medicare FTE cap on direct GME (DGME) payments. These hospitals had an average of 30.8 additional FTE residents above their DGME cap, ranging from 1.0 to 284.3 additional FTE residents.³

Most states (45) paid for GME training through their Medicaid programs in 2015; however, states varied in the payment model that they used to make Medicaid payments for GME training, though most used fee-for-

¹See National Academy of Medicine, *Graduate Medical Education* 2014; and Council on Graduate Medical Education, *State and Managed Care Support for Graduate Medical Education: Innovations and Implications for Federal Policy* (Rockville, Md.: July 2004).

²To develop the survey, we reviewed other surveys of state Medicaid GME payments, interviewed experts in state Medicaid GME spending, and pre-tested the survey in four states.

³Slightly more than half (52 percent) of teaching hospitals were operating above their FTE cap on Medicare IME payments. These hospitals had an average of 32.9 additional FTE residents above their IME cap, ranging from 1.0 to 482.7 additional FTE residents.

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service payments, including supplemental payments. Of the 45 state Medicaid agencies that paid for GME training, 25 states did so through fee-for-service payments only; 19 states did so through both fee-for-service and managed care payments; and 1 state (New Jersey) made managed care payments only.

- Of the 44 states that paid for GME through Medicaid fee-for-service payments, 21 states paid as an add-on to its fee-for-service rate, and 31 states paid through lump sum supplemental or other payments.⁴
- Of the 20 states that made Medicaid managed care payments for GME, 12 paid teaching sites directly and 10 states made GME payments through managed care plans.
- Of the 19 states that paid for GME through both Medicaid fee-for-service and managed care, fee-for-service GME payments made up 48 percent of all Medicaid GME payments, on average, while managed care payments made up 52 percent. (See table 13.)

Table 13: Amount of Medicaid Graduate Medical Education (GME) Spending (Federal and State Share) and Percentage Paid through Fee-for-Service or Managed Care by State, 2015

State	Pays for GME training	Total (dollars)	State share (dollars)	Federal share (dollars)	Fee-for-service payments (percent)	Managed care payments (percent)
Alabama	Yes	43,097,505	13,364,536	29,732,969	100	0
Alaska	No	n/a	n/a	n/a	n/a	n/a
Arizona	Yes	162,992,580	51,909,062	111,083,518	100	0
Arkansas	Yes	24,471,575	7,126,123	17,345,452	100	0
California	No	n/a	n/a	n/a	n/a	n/a
Colorado	Yes	12,788,757	6,297,504	6,491,253	87	13
Connecticut	Yes	20,538,469	10,269,235	10,269,235	100	0
Delaware	Yes	1,055,836	485,157	570,679	51	49
District of Columbia	Yes	62,852,747	18,855,824	43,996,923	77	23
Florida	Yes	79,980,644	32,344,176	47,636,468	100	0
Georgia	Yes	45,992,410	15,320,072	30,672,338	56	44
Hawaii	Yes	—	—	—	—	—

⁴In their description of “other payments,” some states described the payments as supplemental payments. Four states paid for GME training through both lump sum supplemental payments and add-ons to the fee-for-service rate.

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State and Private Sources of Graduate Medical
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State	Pays for GME training	Total (dollars)	State share (dollars)	Federal share (dollars)	Fee-for-service payments (percent)	Managed care payments (percent)
Iowa	Yes	23,811,297	10,443,635	13,367,662	100	0
Idaho	Yes	2,379,846	713,956	1,665,890	100	0
Illinois ^a	Yes	3,000,000	1,500,000	1,500,000	—	—
Indiana	Yes	40,003,743	13,353,248	26,650,495	75	25
Kansas	Yes	14,509,126	6,282,452	8,226,674	7	93
Kentucky	Yes	9,668,045	2,906,214	6,761,831	13	87
Louisiana	Yes	28,640,247	10,866,110	17,774,137	62	38
Maine	Yes	13,384,267	5,075,314	8,308,953	100	0
Maryland	Yes	48,729,611	24,364,805	24,364,805	—	—
Massachusetts	No	n/a	n/a	n/a	n/a	n/a
Michigan	Yes	148,378,700	51,131,297	97,247,403	42	58
Minnesota	Yes	83,626,874	55,505,617	28,121,257	43	57
Missouri	Yes	129,658,845	47,502,119	82,156,726	100	0
Mississippi	Yes	33,588,943	8,874,198	24,714,745	100	0
Montana	Yes	1,523,067	519,366	1,003,701	100	0
Nebraska	Yes	11,200,753	5,192,669	6,008,084	0	100
Nevada	Yes	12,558,221	4,515,308	8,042,913	100	0
New Hampshire	No	n/a	n/a	n/a	n/a	n/a
New Jersey	Yes	100,000,000	50,000,000	50,000,000	0	100
New Mexico	Yes	68,752,386	20,866,349	47,886,037	100	0
New York	Yes	1,739,277,715	869,638,858	869,638,858	27	73
North Carolina	Yes	77,695,273	26,525,166	51,170,107	100	0
North Dakota	No	n/a	n/a	n/a	n/a	n/a
Ohio	Yes	259,881,068	96,844,680	163,036,388	42	58
Oklahoma	Yes	140,931,567	52,492,776	88,438,791	31	69
Oregon	Yes	61,748,548	22,343,500	39,405,048	33	67
Pennsylvania	Yes	118,398,033	56,819,216	61,578,817	100	0
Rhode Island	Yes	1,000,000	1,000,000	0	100	0
South Carolina	Yes	116,642,238	34,269,491	82,372,747	35	65
South Dakota	Yes	2,845,832	1,376,244	1,469,588	100	0
Tennessee	Yes	50,000,000	17,467,499	32,532,501	100	0
Texas	Yes	170,619,557	71,489,594	99,129,962	53	47
Utah	Yes	6,224,847	1,833,448	4,391,400	100	0
Vermont	Yes	30,000,000	13,054,500	16,945,500	100	0
Virginia	Yes	151,952,065	75,976,033	75,976,033	63	37

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State	Pays for GME training	Total (dollars)	State share (dollars)	Federal share (dollars)	Fee-for-service payments (percent)	Managed care payments (percent)
Washington	Yes	11,019,018	5,509,509	5,509,509	13	87
West Virginia	Yes	10,025,192	2,878,734	7,146,458	100	0
Wisconsin	Yes	534,199	221,853	312,346	100	0
Wyoming	No	n/a	n/a	n/a	n/a	n/a
Total	45	4,175,979,646	1,825,325,447	2,350,654,201	48	52
Average		94,908,628	53,423,959	41,484,669	72	28
Median		36,796,343	24,539,775	13,203,874	100	0

Legend: n/a = not applicable; — = not available

Source: GAO web-based survey administered to state Medicaid agencies. | GAO-18-240

Notes: Although Hawaii made Medicaid payments for GME, the state did not provide data on the amount of Medicaid spending. In addition, two states—Illinois and Maryland—could not provide data on the amount of Medicaid GME spending paid through fee-for-services versus managed care payments.

^aAlthough Illinois provided an estimate of the overall amount the state spent on Medicaid payments for GME training, the state could not provide data on the amount paid to each recipient of Medicaid GME funding.

While some states followed the Medicare formula for calculating GME payments, most have deviated from this method. Of the 43 states that responded about how they calculated the amount of GME payments, 10 states reported that they followed the Medicare GME payment formula to calculate Medicaid fee-for-service payments for GME training. In addition, two states followed Medicare’s formula for making managed care payments for GME training. Most states (32) followed another method.⁵

Medicaid GME payments per FTE resident varied by state and within states, even after adjusting for geographic differences in labor costs.⁶ Specifically, the average combined federal and state payment per FTE

⁵Medicare DGME payments are calculated in part using the portion of a hospital’s total inpatient bed days that were paid for by Medicare Part A fee-for-service payments and Medicare Part C managed care payments. Similar to Medicare, some state Medicaid agencies made Medicaid GME payments based on the portion of teaching hospitals’ Medicaid patients that were managed care patients.

⁶We adjusted payments per FTE by the 2015 Centers for Medicare & Medicaid Services wage index to account for geographic differences in the cost of labor.

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resident ranged from \$2,108 in Rhode Island to \$100,587 in Arizona.⁷ (See table 14.) The payment per FTE resident also varied within states. The Medicaid payment per FTE varied the most within Ohio, where the state reported payments ranging from \$1,415 per FTE to \$453,098 per FTE.

Table 14: Medicaid Spending (Federal and State Share) on Graduate Medical Education (GME) Training per Full-Time Equivalent (FTE) Resident by State, 2015

State	Number of funding recipients	Number of FTE residents	Spending per FTE resident (dollars)			
			Average	Median	Minimum	Maximum
Alabama	15	—	—	—	—	—
Arizona	12	1,351.6	100,587	108,004	24,120	170,615
Arkansas	19	1,074.8	16,119	7,959	119	104,023
Colorado	21	—	—	—	—	—
Connecticut	17	1,570.0	9,780	10,634	990	13,712
Delaware	3	—	—	—	—	—
District of Columbia	8	—	—	—	—	—
Florida	52	3,951.3	23,844	21,163	18,581	53,119
Georgia	18	—	—	—	—	—
Hawaii	—	—	—	—	—	—
Iowa	17	845.9	28,638	28,752	11,473	51,523
Idaho	21	—	—	—	—	—
Illinois	22	—	—	—	—	—
Indiana	34	3,263.6	34,241	22,810	53	135,134
Hawaii	—	—	—	—	—	—
Kansas	6	119.0	58,044	53,680	42,743	77,709
Kentucky	15	787.0	9,621	10,018	2,350	21,086
Louisiana	18	1,847.9	14,446	11,130	5	56,178
Maine	4	—	—	—	—	—
Maryland	17	—	—	—	—	—
Michigan	57	8,679.1	12,345	9,221	3,185	60,496
Minnesota	292	3,230.4	38,548	29,743	1,056	184,078
Missouri	29	—	—	—	—	—

⁷Of the 45 states that pay for GME training through Medicaid, 21 were unable to provide FTE resident information, and thus were not included in this calculation. Medicaid spending in these states represents 19 percent of total (federal and state) Medicaid spending on GME training.

**Appendix I: State Medicaid Agency and Other
State and Private Sources of Graduate Medical
Education Funding**

State	Number of funding recipients	Number of FTE residents	Spending per FTE resident (dollars)			
			Average	Median	Minimum	Maximum
Alabama	15	—	—	—	—	—
Mississippi	5	—	—	—	—	—
Montana	4	27.0	68,128	55,322	40,430	121,437
Nebraska	10	—	—	—	—	—
Nevada	1	154.9	73,576	73,576	73,576	73,576
New Jersey	42	3,224.5	18,821	17,134	1,268	63,004
New Mexico	5	396.1	58,082	24,726	24,555	190,002
New York	93	15,518.1	70,775	59,950	3,534	277,540
North Carolina	17	—	—	—	—	—
Ohio	56	6,029.0	47,520	35,275	1,415	454,513
Oklahoma	13	—	—	—	—	—
Oregon	8	—	—	—	—	—
Pennsylvania	84	8,868.0	10,892	9,446	190	38,231
Rhode Island	1	420.7	2,108	2,108	2,108	2,108
South Carolina	14	1,008.7	68,883	68,374	3,437	172,650
South Dakota	3	99.9	30,569	30,345	24,923	36,439
Tennessee	4	—	—	—	—	—
Texas	65	6,184.2	22,036	15,076	615	263,731
Utah	8	—	—	—	—	—
Vermont	1	—	—	—	—	—
Virginia	37	4,814.4	35,047	23,070	110	336,483
Washington	22	—	—	—	—	—
West Virginia	11	736.3	13,586	10,993	6,453	24,652
Wisconsin	3	—	—	—	—	—

Legend: n/a = not applicable; — = not available

Source: GAO web-based survey administered to state Medicaid agencies. | GAO-18-240

Notes: Eighteen states could not provide data on either the number of residents or full-time equivalent residents supported, and three states—North Carolina, Tennessee, and Vermont—provided data on the number of residents but not the number of FTE residents. Medicaid spending in these 21 states represents 19 percent of total (federal and state) Medicaid spending on GME training. We adjusted the amount of funding received per FTE resident by the 2015 Centers for Medicare & Medicaid Services wage index to account for geographic differences in the cost of labor.

About half of the states (22 of 45) reported that they specified the type of expenses that its Medicaid GME payments were intended to cover. Of these 22 states, payments were intended to cover the costs of residents' salaries and benefits (14 states), faculty salaries and benefits (11 states),

program administration costs (10 states), or indirect medical education costs (8 states).

Some state Medicaid agencies have tied their payments to incentives to expand the physician workforce. Of the 45 states that reported Medicaid GME payments in 2015, 4 states—Alabama, Montana, New Mexico, and South Dakota—reported that they restrict payments to the training of primary care physicians only.⁸ (See table 15.) An additional 9 states required that the funding recipient have a primary care residency program. In addition, according to experts we interviewed, states have been considering how to target Medicaid GME payments to meet state workforce needs. For example, one expert said some states have used Medicaid payments to expand GME training of physicians in outpatient, ambulatory care settings. However, Medicaid GME payments generally go to hospitals. Specifically, 44 of the states reported making payments to hospitals and 7 states paid other teaching sites, such as teaching health centers. The one state that did not make payments to teaching hospitals directed all Medicaid payments for GME training to medical schools. Further, one expert we interviewed told us that it is difficult for states to change their GME financing models to direct funding to specific workforce goals because hospitals are reliant on state GME payments to support certain residency positions. Instead, states have used a moderate approach, such as providing additional funding targeted to specific training, rather than a complete funding overhaul that would redistribute existing funds.

⁸One state did not respond to the survey question about the type of health professionals' training that its Medicaid GME payments were intended to cover.

Nearly half (20 of 45 states) also permitted Medicaid GME payments to be used to support the training of other health professionals, such as dentists, physician assistants, or nurses.

Appendix I: State Medicaid Agency and Other State and Private Sources of Graduate Medical Education Funding

Table 15: Health Care Professionals Training Eligible for Medicaid Graduate Medical Education (GME) Payments by State, 2015

Type of Health Professional	Number of States	States ^a
Any type of physician	44	AL, AZ, AR, CO, CT, DE, DC, FL, GA, HI, ID, IL, IN, IA, KS, KY, LA, ME, MD, MI, MN, MS, MO, MT, NE, NV, NJ, NM, NY, NC, OH, OK, OR, PA, RI, SC, SD, TN, TX, UT, VT, VA, WV, WI
Primary care physicians only	4	AL, MT, NM, SD
Dentists and podiatrists	15	AR, CT, GA, IN, MI, MN, MS, NE, NJ, NY, NC, OH, OR, TX, VA
Physician assistants and nurse practitioners	10	IN, IA, KS, LA, MN, MS, OH, OR, VA, WV
Nurses	9	IN, IA, KS, LA, MN, MS, OH, VA, WV
Allied health professionals	8	IN, IA, LA, MN, MS, OH, VA, WI
Other health professionals	5	IN, MN, MS, OH, WV

Sources: GAO web-based survey administered to state Medicaid agencies. | GAO-18-240

Note: Six states—Alaska, California, Massachusetts, New Hampshire, North Dakota, and Wyoming—did not make Medicaid payments for GME funding in 2015.

^aOne state that reported that it made Medicaid payments for GME training—Washington—did not respond to our question about the types of health professionals' training that Medicaid GME payments were intended to cover.

Despite the significant investment in GME training by state Medicaid agencies, which is matched by the federal government, the extent of state oversight of Medicaid GME spending varied by state. As previously mentioned, less than half of the states (20 of 45) required teaching sites that received Medicaid GME payments to report information to the state.⁹ (See table 16.) Among these 20 states, 16 required recipients to report information on the number of residents or FTE residents, 8 states required information about direct medical education costs, 6 states required information about the GME training program specialties supported, and 4 states required recipients to report information about the residents' characteristics, such as their post-graduate year. Of the 10 states that made Medicaid GME payments to managed care plans, 4 states—Kansas, Kentucky, Michigan, and Minnesota—set the methodology or base rate that managed care plans were required to use to calculate GME payments. None of the states reviewed and approved payments.

⁹Among the 20 states that paid for GME through managed care (either to managed care plans or directly to teaching entities), few states (6 of 20) required recipients of GME payments to report information to the state.

**Appendix I: State Medicaid Agency and Other
State and Private Sources of Graduate Medical
Education Funding**

Table 16: Reporting Requirements for Medicaid Graduate Medical Education (GME) Training by State, 2015

Type of Information Required to be Reported	Number of States	States
Number of residents	16	AR, FL, ID, MN, MT, NV, NJ, NM, OH, PA, SD, TN, TX, VT, VA, WI
Direct GME training costs	8	AR, ID, NJ, OH, PA, SD, VA, WI
Type of GME training programs supported	6	AZ, FL, MN, PA, VT, WI
Resident characteristics	4	AZ, FL, MN, VT
Indirect medical education costs	3	ID, OH, TN
State required recipients of Medicaid GME payments to report information to the state	20	AZ, AR, FL, ID, LA, MN, MS, MT, NV, NJ, NM, OH, OK, PA, SD, TN, TX, VT, VA, WI

Sources: GAO web-based survey administered to state Medicaid agencies. | GAO-18-240

Note: Six states—Alaska, California, Massachusetts, New Hampshire, North Dakota, and Wyoming—did not make Medicaid payments for GME funding in 2015.

Further, 44 of the 45 states were able to provide at least some information on the total amount the state spent on Medicaid GME payments, but the amount of information they were able to provide varied. While most states (38) were able to provide data on all GME payments by recipient, 4 states could provide data on some but not all payments, and 2 states could not provide data on the amount of GME payments by recipient.¹⁰ And, less than half of the states (18 of 45) were unable to provide data on either the number of FTE residents or resident counts at teaching entities that received Medicaid GME payments.¹¹ (See table 17.)

¹⁰Illinois did not report information on the amount spent by funding recipient. Illinois, however, was able to provide an estimate of the total amount of Medicaid GME payments that the state made in 2015 and provided a list of recipients of those payments. Slightly more than half of states (25 of 45) provided data on the exact amount of the GME payments while 16 states could only provide estimates. One state—Alabama—did not respond to our question about the completeness of the data the state provided on Medicaid GME payments.

¹¹Most states provided data on the number of FTE residents at the teaching entity while three states—North Carolina, Tennessee, and Vermont—provided the count of residents at the teaching entity.

**Appendix I: State Medicaid Agency and Other
State and Private Sources of Graduate Medical
Education Funding**

Table 17: Recipient and Resident Data Available for State Medicaid Graduate Medical Education (GME) Payments

Data availability from states	Number of states	States
GME payments by recipient^a		
All	38	AZ, AR, CO, CT, DE, DC, FL, GA, ID, IN, IA, KS, KY, LA, ME, MD, MI, MS, MO, MT, NV, NJ, NM, NY, NC, OH, OK, OR, PA, RI, SC, SD, TN, TX, UT, VT, VA, WV
Some	4	MN, NE, WA, WI
No data on payments by recipient	2	HI, IL
Number of residents supported		
Full-time equivalent residents	24	AZ, AR, CT, FL, IN, IA, KS, KY, LA, MI, MN, MT, NV, NJ, NM, NY, OH, PA, RI, SC, SD, TX, VA, WV
Resident counts	3	NC, TN, VT
No data on residents	18	AL, CO, DE, DC, GA, HI, ID, IL, ME, MD, MS, MO, NE, OK, OR, UT, WA, WI

Source: GAO web-based survey administered to state Medicaid agencies. | GAO-18-240

^aOne state—Alabama—did not respond to our question about the completeness of the data the state provided on Medicaid GME payments.

Experts we interviewed identified other sources of state and private funding for GME training.

- **Hospitals and health systems:** Hospitals may rely on their own funding to support their residency programs. One expert we interviewed said that hospitals that sponsor GME residency programs provide funding for certain specialty residency programs that make money for the hospital.
- **State government grant or other funding:** Aside from GME funding through Medicaid, one expert told us that some states make direct grants to residency programs, mostly primary care residency programs, or through state appropriations specifically for GME training. For example, Florida created an \$80 million fund to support state training in outpatient or community-based programs. And, one expert told us that some states have developed innovative funding mechanisms. This was the case in Georgia, which established a hospital coalition that funded 400 new residency slots to meet the needs of medically underserved populations.
- **Private health insurers:** Experts said GME funding from private health insurers is generally thought to be provided through higher reimbursement rates to teaching hospitals than nonteaching hospitals, including through Medicare reimbursement. While private insurers fund GME training through their contracts with individual hospitals,

one expert told us that those contracts do not likely differentiate the amount of funding that is used toward GME training versus other activities. However, one expert raised concerns that private insurers are not paying their share of GME costs. Another expert noted that there have been some state-level efforts to require all payers, including private insurers, to have some responsibilities in paying for the education of the health care workforce, even beyond physician GME training.

- **Other:** Experts also identified other possible sources of private funding. For example, one expert told us that, while the amount of funding from pharmaceutical or medical device companies has not been identified in existing studies, anecdotally there is a growing use of these funding sources. Experts also said that some funding is provided by philanthropic organizations or medical schools that are affiliated with residency programs.

Appendix II: Information that Federal Programs Collect about Funding for Graduate Medical Education Training

Table 18: Selected Information that Federal Agencies Collect about Funding for Graduate Medical Education (GME) Training

Type of Information	Centers for Medicare & Medicaid Services (CMS)		Department of Veterans Affairs (VA)	Health Resources and Services Administration (HRSA)	
	Medicare GME Payments	Medicaid GME Payments ^a	VA Physician GME Payments	Children's Hospitals GME Payment Program	Teaching Health Center GME Program
Amount Spent on GME Training					
Total amount spent	√	√ ^b	√	√	√
by funding recipient	√	—	— ^c	√	√
by residency program	—	—	—	—	√
Costs and Revenues of GME Training Programs Supported					
Direct GME costs, such as residents' stipends and benefits	√	—	√ ^d	—	√
Indirect medical education costs	—	—	—	—	√ ^e
Revenue generated by residents	—	—	—	—	√
Output of GME Training Programs Supported					
Total number of resident positions or FTE residents	√	—	√	√	√
Count of residents or FTE residents by type of residency program	√	—	√	√	√
Count of residents or FTE residents by their number of years completed in all types of residency programs	√	—	√	√	√
Whether the resident is an underrepresented minority	—	—	—	√	√
Whether the resident is from a disadvantaged background	—	—	—	√	√
Whether the resident is from a rural area	—	—	—	√	√
Resident rotation schedules or other documentation of time residents' spent training at other sites	√	—	√	√	√
Whether residents received training in a nonhospital or primary care setting	√	—	—	√	√
Whether residents received training in a medically underserved area	—	—	—	√	√

**Appendix II: Information that Federal Programs
Collect about Funding for Graduate Medical
Education Training**

Type of Information	Centers for Medicare & Medicaid Services (CMS)		Department of Veterans Affairs (VA)	Health Resources and Services Administration (HRSA)	
	Medicare GME Payments	Medicaid GME Payments ^a	VA Physician GME Payments	Children's Hospitals GME Payment Program	Teaching Health Center GME Program
Whether residents received training in a rural area	— ^f	—	—	√	√
Outcome of GME Training Programs Supported^g					
Whether residents went on to practice in a primary care field or primary care setting	—	—	—	√	√
Whether residents went on to practice in medically underserved areas	—	—	—	√	√
Whether residents went on to practice in a rural versus urban area	—	—	—	√	√
Quality of GME Training Programs Supported					
Accreditation status of GME training programs supported	√	—	√	√	√
Learning experiences of residents in GME training programs supported, such as whether residents received training in certain topic areas or competencies	—	—	√	√	√

Legend: √ = agency collected the type of information; — = agency did not collect the type of information

Source: GAO analysis of information from the CMS, HRSA, and the VA. | GAO-18-240

^aCMS generally collects limited information specifically about states' Medicaid GME programs. Instead, overall payments for costs incurred by hospitals, including those for GME training costs, are subject to statutory and regulatory reporting and program integrity requirements within the Medicaid program, including upper payment limit requirements codified at 42 C.F.R. § 447.272.

^bInformation about the amount of Medicaid GME supplemental payments that CMS collects provides an incomplete account of total Medicaid GME spending. Medicaid GME supplemental payments are a subset of all Medicaid GME payments and exclude other Medicaid GME payments, such as those made through adjustments to the state's payment rates.

^cVA central office is responsible for making spending allocations to its VA medical facilities. And, VA medical facilities are responsible for making payments to academic affiliates to reimburse them for the costs of residents' salaries and benefits while they are at the VA medical facility. While VA central office collects data on the amount it allocates to each VA medical facility, it does not collect data on the amount of payments that VA medical facilities make to each academic affiliate.

^dVA only collects direct costs data on residents' salaries and benefits. It does not collect data on nor reimburse affiliates for other direct costs, such as administrative expenses, accreditation and licenses fees, or the costs of educational materials.

^eExperts who conducted a one-time cost evaluation of Teaching Health Center GME Program recipients said that the costing instrument used collected all possible costs that teaching health centers incurred by operating GME training programs, including those that otherwise are considered indirect costs.

**Appendix II: Information that Federal Programs
Collect about Funding for Graduate Medical
Education Training**

^fAlthough CMS is not required to track information on Medicare GME funding to urban versus rural hospitals, CMS officials told us that cost report data can be used in conjunction with other data to determine whether a hospital that received Medicare GME funding was located in a rural area.

^gVA collects information on residents' likelihood of considering future employment at a VA medical facility.

Appendix III: Comments from the Department of Health and Human Services



DEPARTMENT OF HEALTH & HUMAN SERVICES

OFFICE OF THE SECRETARY

Assistant Secretary for Legislation
Washington, DC 20201

FEB 27 2018

James Cosgrove
Director, Health Care
U.S. Government Accountability Office
441 G Street NW
Washington, DC 20548

Dear Mr. Cosgrove:

Attached are comments on the U.S. Government Accountability Office's (GAO) report entitled, "*Physician Workforce: HHS Needs Better Information to Comprehensively Evaluate Graduate Medical Education Funding*" (GAO-18-240).

The Department appreciates the opportunity to review this report prior to publication.

Sincerely,

A handwritten signature in cursive script, appearing to read "Matthew D. Bassett".

Matthew D. Bassett
Assistant Secretary for Legislation

Attachment

GENERAL COMMENTS OF THE DEPARTMENT OF HEALTH AND HUMAN SERVICES (HHS) ON THE GOVERNMENT ACCOUNTABILITY OFFICE'S DRAFT REPORT ENTITLED - PHYSICIAN WORKFORCE: HHS NEEDS BETTER INFORMATION TO COMPREHENSIVELY EVALUATE GRADUATE MEDICAL EDUCATION FUNDING (GAO-18-240)

The U.S. Department of Health and Human Services (HHS) appreciates the opportunity from the Government Accountability Office (GAO) to review and comment on this draft report.

Recommendation 1

The Secretary of HHS should coordinate with federal agencies, including the Department of Veterans Affairs, that fund Graduate Medical Education (GME) training to identify information needed to evaluate the performance of federal programs that fund GME training, including the extent to which these programs are efficient and cost-effective and are meeting the nation's health care workforce needs.

HHS Response

HHS concurs with GAO's recommendation.

With regards to the 2015 recommendation, in the budget released on February 12, 2018, the Administration proposes consolidating Federal graduate medical education spending from Medicare, Medicaid, and the Children's Hospitals GME program into a single grant program for teaching hospitals. The total funding amount would equal the sum of Medicare and Medicaid's 2016 payments for graduate medical education, plus 2016 spending on Children's Hospitals GME, adjusted for inflation. This amount would then grow at the Consumer Price Index for all Urban Consumers minus one percentage point each year. Payments would be distributed to hospitals based on the number of residents at a hospital (up to its existing cap) and the portion of the hospital's inpatient days accounted for by Medicare and Medicaid patients. The new grant program would be jointly operated by the Administrators of the Centers for Medicare and Medicaid Services and the Health Resources and Services Administration. This grant program would be funded out of the general fund of the Treasury. The Secretary would have authority to modify the amounts distributed based on the proportion of residents training in priority specialties or programs (e.g., primary care, geriatrics) and based on other criteria identified by the Secretary, including addressing health care professional shortages and educational priorities.

As a new grant program, this consolidated approach to GME allows the Department to set priorities for medical training, set expectations, and reward performance. This approach would also offer the opportunity to assess alignment of reporting metrics across GME efforts. The Department looks forward to developing the parameters for this new grant program should the necessary implementing legislation be enacted into law. If the Congress adopts the budget proposal, the Department could then work towards addressing both of the GAO's current recommendations.

The GAO report provides an excellent overview of the structure of various GME payment programs and how this reduces program integrity risks, current federal oversight efforts, total program spending, variations in payment levels, factors and challenges in measuring training site costs, and current gaps in evaluation evidence. This information, along with the articles listed in the bibliography of the draft report serve as helpful references.

GENERAL COMMENTS OF THE DEPARTMENT OF HEALTH AND HUMAN SERVICES (HHS) ON THE GOVERNMENT ACCOUNTABILITY OFFICE'S DRAFT REPORT ENTITLED: HIGH-CONTAINMENT LABORATORIES: IMPROVED OVERSIGHT OF DANGEROUS PATHOGENS NEEDED TO MITIGATE RISK (GAO-16-642)

Recommendation 2

The Secretary of HHS should coordinate with federal agencies to identify opportunities to improve the quality and consistency of the information collected within and across federal programs, and implement these improvements.

HHS Response

HHS concurs with GAO's recommendation.

Please note aforementioned response.

Appendix IV: Comments from the Department of Veterans Affairs



DEPARTMENT OF VETERANS AFFAIRS
WASHINGTON DC 20420

February 6, 2018

Mr. James C. Cosgrove
Director
Health Care
U.S. Government Accountability Office
441 G Street, NW
Washington, DC 20548

Dear Mr. Cosgrove:

The Department of Veterans Affairs (VA) has reviewed the Government Accountability Office's (GAO) draft report, ***"PHYSICIAN WORKFORCE: HHS Needs Better Information to Comprehensively Evaluate Graduate Medical Education Funding"*** (GAO-18-240).

The enclosure provides general comments. VA appreciates the opportunity to comment on your draft report.

Sincerely,

A handwritten signature in black ink that reads "Gina S. Farrissee".

Gina S. Farrissee
Deputy Chief of Staff

Enclosure

Enclosure

Department of Veterans Affairs (VA) Comments to
Government Accountability Office (GAO) Draft Report
***“PHYSICIAN WORKFORCE: HHS Needs Better Information to Comprehensively
Evaluate Graduate Medical Education Funding”***
(GAO-18-240)

General Comments:

The Department of Veteran Affairs (VA) spent nearly \$1.5 billion in 2015 for the Graduate Medical Education (GME) program. This amount included physician resident stipends and benefits, as well as field-based costs for faculty supervision and infrastructure. These dollars funded over 10,000 full-time equivalent physician residents through which over 40,000 individual residents rotated. VA's GME program accounts for approximately 10 percent of GME funding in the Nation.

While GAO did not make any recommendations to VA in this report, GAO is asking Federal agencies to better share GME information. VA has significant relationships with other Federal funders of GME, such as the Health Resources and Services Administration and the Department of Defense, and looks forward to further dialogue on these issues.

Appendix V: GAO Contact and Staff Acknowledgments

GAO Contact

James Cosgrove, (202) 512-7114 or cosgrovej@gao.gov

Acknowledgments

In addition to the contact named above, William Hadley, Assistant Director; Christine Brudevold, Assistant Director; Katherine Mack, Analyst-in-Charge; A. Elizabeth Dobrenz; Maggie G. Holihan; Daniel Lee; and Todd Anderson made key contributions to this report. Also contributing were Sam Amrhein, Muriel Brown, Lisa Opdycke, and Jennifer Whitworth.

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