

# Eliminating Residents Increases the Cost of Care

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## ABSTRACT

**Background** Academic health centers are facing a potential reduction in Medicare financing for graduate medical education (GME). Both the Medicare Payment Advisory Commission and the National Commission on Fiscal Responsibility and Reform (Deficit Commission) have suggested cutting approximately half the funding that teaching hospitals receive for indirect medical education. Because of the effort that goes into teaching trainees, who are only transient employees, hospital executives often see teaching programs as a drain on resources.

**Objective** In light of the possibility of a Medicare cut to GME programs, we undertook an analysis to assess the financial risk of training programs to our institution and the possibility of saving money by reducing resident positions.

**Methods** The chief administrative officer, in collaboration with the hospital chief financial officer, performed a financial analysis to examine the possibility of decreasing costs by reducing residency programs at the University of Massachusetts Memorial Medical Center.

**Results** Despite the real costs of our training programs, the analysis demonstrated that GME programs have a positive impact on hospital finances.

**Conclusions** Reducing or eliminating GME programs would have a negative impact on our hospital's bottom line.

## Introduction

Since Medicare began in 1965, teaching hospitals have received payments for graduate medical education (GME). Educational activities often enhance the quality of care at an institution,<sup>1,2</sup> so part of the net cost of GME might be considered a cost of patient care and borne by the hospital insurance program.<sup>3,4</sup> In 1984, the advent of the prospective payment system for the Medicare program separated GME charges from other hospital charges. Beginning in 1985, a per-resident amount was set for existing programs, and the indirect medical education (IME) adjustment was developed and separated from direct medical education (DME). The Balanced Budget Act of 1997 capped the number of residency positions supported by Medicare in each institution at the level supported in 1996 (known as the cap).

In June 2010, the Medicare Payment Advisory Commission (MedPAC)<sup>5</sup> reported that only 40% to 45% of the Centers for Medicare & Medicaid Services (CMS) IME payments can be justified to cover the higher patient care costs of Medicare inpatients, putting 55% to 60% of IME payments

at risk of being cut. Subsequently, both MedPAC<sup>5</sup> and the National Commission on Fiscal Responsibility and Reform (Deficit Commission)<sup>6</sup> recommended cutting approximately half the IME funding for teaching hospitals. This would result in dramatically reduced revenues for all teaching hospitals.

If teaching residents adds to hospital costs, as implied in the IME and DME allocations, then eliminating residents as a cost-saving measure is 1 option. Many teaching hospitals hired affiliate practitioners (NPs) and full-time hospitalists to replace patient care hours provided by GME trainees prior to the establishment of work hour limits. This increased patient care costs. Since NPs work fewer hours than residents, simply replacing residents one-for-one with NPs is not financially viable.

We used a case scenario approach to investigate this problem at the University of Massachusetts Memorial Medical Center (UMMMC).

## Methods

The University of Massachusetts Medical School sponsors 53 Accreditation Council for Graduate Medical Education–accredited residency and fellowship programs, with a total of 422 residents and 92 fellows. In 2012–2013, the institution was 60 positions over the CMS cap and received no

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*Editor's Note: The online version of this article contains tables of direct medical expense program expenses, allocation of graduate medical education (GME) teaching dollars, and support of GME at the University of Massachusetts.*

Medicare direct GME payments for these positions. As we expand or add new programs, the pool of available teaching dollars is diluted, and it has remained stagnant for 8 years. UMMMC is a tertiary care hospital with 779 licensed beds, 855 652 outpatient visits, and 42 161 admissions in fiscal year 2016. We estimate that UMMMC, our clinical partner, could face a \$30 million reduction in IME in the future, based on cuts as high as 60%.

As part of the hospital's strategic planning, GME was considered a financial risk that needed to be "mitigated." We determined the actual cost of training residents in each program and the institution as a whole (provided as online supplemental material) and investigated whether eliminating GME in select areas would lessen the financial liability of the hospital.

We focused on scenarios in which eliminating selected residents, or selected programs and their associated costs, might save the hospital money. We also concentrated on areas in which associated clinical volume could potentially be absorbed by existing attending physicians and/or NPs, because hiring a new cadre of physicians or NPs would be prohibitively expensive. We generated 4 scenarios (TABLE 1):

1. Replace residents with NPs in internal medicine,
2. Replace anesthesia residents with certified registered nurse anesthetists,
3. Eliminate a small residency program (10 residents in a largely outpatient specialty) and absorb patient volume with 5 additional NPs, and
4. Eliminate small fellowship programs ( $\leq 3$  fellows).

## Results

Eliminating residents in large programs did not result in savings, as the replacement costs are higher than the direct costs of the residents. Eliminating small residencies or fellowships would save teaching and administrative costs and could save up to \$5.6 million of the projected \$30 million shortfall (TABLE 2), assuming no new GME programs are established. It is unlikely that any academic medical center could eliminate more than 50% of its small residency and fellowship programs without creating significant problems in morale and prestige.

## Discussion

Our analysis demonstrates that GME programs are a positive factor in hospital finances and should not

be considered a financial risk. Replacement costs for residents are typically not factored in when considering the costs of GME training programs to an institution, and our analysis shows that replacement costs with affiliate practitioners are prohibitively expensive in both internal medicine and anesthesia.

Hospital-hired NPs work 8- to 12-hour shifts and are paid considerably more than residents. They are also not always readily available in the numbers we would need to replace residents. Eliminating an entire outpatient-based residency similarly did not approach the required savings we would need if Medicare cuts came to fruition; this also assumes that existing attendings and a small number of NPs can absorb the volume seen by residents without additional costs.

Another hypothesis is that reducing or eliminating residents (and the unnecessary laboratory and radiological tests often attributed to them) would result in significant savings to the institution. While this a provocative idea, it has never been proven, and a recent article by Iannuzzi et al<sup>7</sup> suggests that resident teams are actually more economical than NP teams.

Multiple studies<sup>8,9</sup> challenge the concept that the cost of hospital care is increased in teaching hospitals. Khaliq et al<sup>8</sup> studied the cost of caring for patients on a teaching service versus those on a nonteaching service at the same hospital and found no difference in either cost or clinical outcomes. Similarly Kane et al<sup>9</sup> studied patients on a teaching versus nonteaching service and found that there was a minimal effect on cost and length of stay (after adjustment for case severity).

Our analysis reveals the following 2 fundamental facts about GME funding: (1) hospitals currently generate profit margins on GME funding through Medicare (provided as online supplemental material), and (2) should Medicare cut funding for GME, closing residency programs would not solve the problem and would lead to further erosion of hospital profits.

There are limitations to our analysis. We assumed GME financial support by nongovernment payers (provided as online supplemental material), which may not be the case solely based on the presence of GME programs in an institution rather than specific services that these hospitals provide. A second limitation is that our analysis is based entirely on financial considerations. The intangible costs would be significant, including decreased faculty morale with loss of faculty, increased faculty recruitment costs, decreased faculty productivity, quality of care issues, and inability to care for our patient population. Thus, our estimates of the consequences

**TABLE 1**

Scenarios to Mitigate Graduate Medical Education Cost Reductions  
 Scenario 1: Costs of Replacing 1 Internal Medicine Resident with 1.8 NPs

Cost	Resident	NP	Impact
FTE	1.0	1.8	
Salary	\$54,573	\$189,000	
Benefits	\$12,978	\$47,250	
Malpractice	\$9,115	\$8,500	
Allowance/other	\$980	\$1,000	
Total direct	\$77,646	\$245,750	(\$168,104)

Scenario 2: Costs of Replacing 1 Anesthesia Resident with 1.5 CRNAs

Cost	Resident	CRNA	Impact
FTE	1.0	1.5	
Salary	\$53,492	\$232,500	
Benefits	\$12,720	\$58,125	
Malpractice	\$14,822	\$8,500	
Allowance/other	\$980	\$1,000	
Total direct	\$82,014	\$300,125	(\$218,111)

Scenario 3: Effects of Eliminating Entire Small (–10) Ambulatory Residency Program

Cost	Resident	NP	Impact
FTE	10	5	
Salary	\$570,000	\$525,000	
Benefits	\$135,004	\$131,250	
Malpractice	\$110,000	\$8,500	
Allowance/other	\$9,800	\$1,000	
Total direct	\$824,804	\$665,750	\$159,054
Teaching/program	\$461,836	\$0	\$461,836
Total expenses	\$1,286,640	\$665,750	\$620,890
\$/learner			\$62,089

Scenario 4: Effects of Eliminating Entire Small Fellowship Program

Cost	Fellow	Replacement	Impact
FTE	incl		
Salary	incl		
Benefits	incl		
Malpractice	incl		
Allowance/other	incl		
Total direct	\$124,317		\$124,317
Teaching/program	\$63,900		\$63,900
Total expenses	\$188,217		\$188,217
\$/learner			\$188,217

Abbreviations: NP, nurse practitioner; FTE, full-time equivalent; CRNA, certified registered nurse anesthetist; incl, included.

dramatically understate the actual problem presented by a decrease in federal support of GME. We recommend transparent discussions about GME financing, unrelated to politics. We also recommend that further research be done to determine the true financial costs to institutions if we are forced to cut residencies, including impact on patient flow, length

of stay, and quality of care and access, in addition to the actual replacement costs for residents and fellows.

### Conclusion

In 1 tertiary medical center, a simple calculation of Medicare “revenues” to residency programs minus

**TABLE 2**  
Model for Potential Savings

Model	No. of Programs	No. of Learners	\$ Saved	Note
Fellowships with < 3 fellows	20	31	4,636,570	Assumes no backfill
Residencies with < 10 residents	8	41	2,493,963	Assumes 50% backfill with NPs/PAs
Total	28	72	7,130,533	
Assume at 50% eliminated	14	36	3,565,267	
Additional resident/fellow slots		24	2,061,250	
Total		60	5,626,517	

Abbreviations: NPs, nurse practitioners; PAs, physician assistants.

Note: The \$5.6 million total was obtained by (1) eliminating 50% of all fellowship programs with ≤ 3 fellows and residency programs with < 10 residents, which would net \$3.56 million (reduction of 14 programs with 36 residents/fellows); and (2) eliminating additional resident/fellow slots from other, larger programs, which would yield 24 slots and an additional \$2.06 million in savings.

the costs of running the program demonstrates financial benefits to the hospital from GME. If GME funding is cut, eliminating residency programs will not resolve the resulting financial gap.

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