

Developing, Funding, and Providing Information Technology at U.S. Medical Schools

The adoption of technology based approaches to conducting business, learning, and creating communities presents an increasingly complex set of information technology (IT) challenges for U.S. medical schools. For example, the Health Information for Economic and Clinical Health (HITECH) Act—part of the American Recovery and Reinvestment Act—mandated health care providers to implement health IT to improve patient outcomes and system efficiencies. In addition, medical schools must adapt to rapid technological changes that affect not only their

patient care mission but also their education and research missions. Developing, funding, and providing IT is a significant infrastructure investment, but there are very few benchmarks in the literature to inform institutions developing strategies for integrating IT into academic medicine. This *Analysis in Brief* (AIB) provides a national snapshot of these benchmarks for the academic medicine community.

Methodology

This study presents select results from the 2009 Medical School IT

Survey administered by the AAMC's Group on Information Resources. On the annual survey respondents are asked who develops, funds, and provides IT services on their campus. Respondents select all applicable funders and providers across a series of IT service categories, and they list up to four products used for a specific technology and indicate the origin (vendor, homegrown, or open-source) for each product.¹ Seventy-eight of the 133 U.S. medical schools at that time completed the survey. An analysis of these respondents indicated that they were similar to medical schools nationally.¹

Table 1. Percentages of Vendor, Homegrown, and Open Source Information Technology Products at U.S. Medical Schools*

Information Technology Product [†]	No. of Responding Medical Schools	Percentage of Responding Medical Schools Using a Given Product Type		
		Vendor	Homegrown	Open Source
Financial	74	95%	24%	1%
Clinical Skills/Simulation Management Software	55	95%	13%	0%
Human Resources	73	93%	27%	0%
Collaboration Tools in Education	58	83%	16%	33%
Curriculum Management and Course Delivery	71	75%	35%	15%
Online Evaluation	66	74%	42%	3%
Student Systems	75	73%	55%	0%
GME Management System	43	72%	37%	0%
Grants Management	63	70%	41%	13%
Faculty Information System	61	43%	75%	3%
Conflict of Interest Disclosure/Management	45	31%	71%	0%

*In total, 78 medical schools provided responses across IT products. The numerator for the percentages is the number of responding schools for each product.

†Schools could indicate more than one product type so row totals can exceed 100%.

Results

Who develops IT products for U.S. medical schools? As shown in Table 1, medical schools used a combination of vendor-developed, homegrown, and open-source IT products to meet their IT needs. Vendor-developed IT products were used by at least 90 percent of the responding medical schools in domains such as financial operations (95 percent) and clinical skills software (95 percent). The most common domains for homegrown products were faculty information systems (75 percent) and conflict-of-interest management systems (71 percent). Open-source software was most frequently cited for use in collaborative educational technologies (33 percent).

Who funds and provides IT services for U.S. medical schools? Table 2 lists all sources of funding (e.g., university,

¹For examples of service and product information collected on the survey and additional information about the survey's respondents, see Supplemental Information: www.aamc.org/data/aib.

Table 2. Percentage of Funding Sources for Information Technology Systems at 75 U.S. Medical Schools*

Categories	University	Medical School	Department	Health Science Center	Hospital	Practice Plan	Other
Administrative Systems	68%	37%	5%	27%	11%	12%	3%
Clinical Systems	4%	23%	9%	11%	52%	56%	4%
Educational Technology	43%	68%	13%	27%	4%	1%	4%
Regulatory Compliance Systems	47%	47%	5%	33%	17%	13%	7%
Research Computing	45%	47%	43%	27%	8%	4%	11%
Student Systems	63%	57%	1%	27%	1%	1%	3%

Table 3. Percentages of Institutional Service Providers for Information Technology Systems at 75 U.S. Medical Schools*

Categories	University	Medical School	Department	Health Science Center	Hospital	Practice Plan	Other
Administrative Systems	69%	31%	5%	27%	11%	7%	3%
Clinical Systems	4%	15%	13%	11%	51%	43%	5%
Educational Technology	45%	56%	13%	23%	3%	1%	1%
Regulatory Compliance Systems	51%	32%	7%	27%	15%	8%	4%
Research Computing	53%	41%	36%	27%	8%	4%	8%
Student Systems	63%	51%	8%	27%	0%	1%	3%

*Because there may be multiple sources of funding for systems at an institution, row and column totals exceed 100%.

medical school, department, etc.) for selected IT services at an academic health center, and Table 3 lists the providers of the services. The results indicate that the part of the academic health center that funds an IT service also tends to provide the service. In the category of educational technology, for example, 68 percent of medical schools, 43 percent of universities, and 27 percent of health sciences centers contributed funding. Similarly, 56 percent of medical schools, 45 percent of universities, and 23 percent of health sciences centers provided the educational technology services.

The distribution of funding and services varies by category. For example, administrative and student systems appear centralized (i.e.,

with funding and services provided primarily by the university and medical school). On the other hand, 47 percent of medical schools, 45 percent of universities, and 43 percent of departments provide funding for research computing, and 41 percent of medical schools, 53 percent of universities, and 36 percent of departments provide this service.

Discussion

Information technology is indispensable at all U.S. medical schools. The data in this report shed light on where medical schools use vendor-developed, homegrown, or open-source products to meet their IT needs across their mission areas. While the prevalence of vendor-developed products may indicate the potential benefits of off-the-

shelf products, homegrown solutions are also popular across a wide variety of IT technology domains and predominate in areas specific to medical schools, such as faculty information systems. As medical schools continue to seek greater efficiencies and cost savings, these data can begin to help medical schools know where to target their efforts. How an individual medical school addresses the challenges of integrating its IT will depend on its particular context and factors such as the organizational and financial relationships among its affiliated institutions.

Finally, the findings from this *Analysis in Brief* may inform some important policy issues. For example, this study documents shared funding of IT services and shared responsibility for providing those services—a finding that reflects efforts to manage the cost and complexity of delivering services across a diverse environment. To meet the various needs of education, research, and clinical care, medical schools and their partners must cultivate shared understanding about the goals, costs and roles of systems to fund and support the operations and delivery of academic medicine.

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