

# Allocating Limited Resources in a Time of Fiscal Constraints: A Priority Setting Case Study From Dalhousie University Faculty of Medicine

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## Abstract

Facing a projected \$1.4M deficit on a \$35M operating budget for fiscal year 2011/2012, members of the Dalhousie University Faculty of Medicine developed and implemented an explicit, transparent, criteria-based priority setting process for resource reallocation. A task group that included representatives from across the Faculty of Medicine used a program budgeting and marginal analysis (PBMA) framework, which provided an alternative to the typical public-sector approaches to addressing a budget deficit of across-the-board spending cuts and political negotiation. Key steps to the PBMA process included

training staff members and department heads on priority setting and resource reallocation, establishing process guidelines to meet immediate and longer-term fiscal needs, developing a reporting structure and forming key working groups, creating assessment criteria to guide resource reallocation decisions, assessing disinvestment proposals from all departments, and providing proposal implementation recommendations to the dean. All departments were required to submit proposals for consideration. The task group approved 27 service reduction proposals and 28 efficiency gains

proposals, totaling approximately \$2.7M in savings across two years. During this process, the task group faced a number of challenges, including a tight time line for development and implementation (January to April 2011), a culture that historically supported decentralized planning, at times competing interests (e.g., research versus teaching objectives), and reductions in overall health care and postsecondary education government funding. Overall, faculty and staff preferred the PBMA approach to previous practices. Other institutions should use this example to set priorities in times of fiscal constraints.

In early 2012, the Minister of Advanced Education in Nova Scotia announced that funding for universities in the province

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Acad Med. 2013;88:00-00.

First published online

doi: 10.1097/ACM.0b013e318294fb7e

for the 2012/2013 fiscal year (FY) would be reduced by 3%,<sup>1</sup> following the pattern over the last decade of reductions in postsecondary education funding.<sup>2</sup> This decline in funding parallels that in other sectors in Canada, such as in health care. The Minister of Finance, for example, recently announced that future increases in the Canada Transfer Payment, which accounts for about 20% of all health care funding, will be tied directly to the nominal gross domestic product, indicating that affordability and sustainability are key principles for this government moving forward.<sup>3</sup> Indeed, polls in Canada suggest that members of the public would prefer to see spending reduced in the public sector than to face increases in income or sales tax.<sup>4</sup> Achieving financial stability and “living within one’s means” will be key challenges for Canadians and the Canadian government in the foreseeable future.

As with many modern medical schools, the Faculty of Medicine at Dalhousie University, the only medical school in Nova Scotia, follows a strategic plan laid out by university leaders. The 2010 strategic plan identified four major priorities for the Faculty of Medicine:

educating the doctors and researchers of the future; enhancing patient care and population health; advancing an innovative research agenda; and organizational, operational, and fiscal renewal.<sup>5</sup> Included in this document is the Faculty of Medicine’s goal of financial stability. Yet, universities and other public-sector organizations in Nova Scotia are facing tremendous fiscal constraints, as are similar organizations across Canada and in many other developed countries around the world.<sup>6</sup> In short, senior administrators at postsecondary institutions are charged with the difficult task of meeting both expanding service needs and increasing demands whilst budgets are shrinking. Although we acknowledge that no easy fix to this challenge exists, the literature describes tools that are available to assist decision makers in prioritizing their goals to get the most benefit from their limited resources.

In publicly funded health systems, one approach to priority setting that has received much attention in the last 30 years is program budgeting and marginal analysis (PBMA).<sup>7</sup> This framework has been used successfully

many times in health service delivery organizations to guide decision makers in determining how best to spend limited resources.<sup>8,9</sup> The approach includes eight steps: (1) Determine the aim and scope of the activity, (2) identify a representative priority setting committee to provide recommendations to a senior leadership team or single senior administrator, (3) determine how resources are allocated currently, (4) identify a set of decision criteria, then define and weight the criteria to reflect their relative importance, (5) identify options for investment and/or disinvestment (depending on the project aims), (6) assess the relative value of those options and provide initial allocation recommendations, (7) validate the initial set of recommendations and provide a window for appeals, and (8) evaluate and refine the process for future activities.

In recent years, many have used multicriteria decision analysis (MCDA) within the PBMA framework as the main tool for assessing the benefits of different health care delivery options.<sup>10,11</sup> In fact, various sectors have used MCDA in decision making, including the public sector because it addresses the fundamental issue faced by administrators—They often must choose between multiple, and at times competing, objectives.<sup>12</sup> At its core, MCDA recognizes that multiple objectives, and thus multiple criteria, are important in the decision-making process of most complex organizations. In MCDA, alternatives, or options for change, are compiled using a standard business case template, then are assessed, with assessors giving each option a rating for each criterion. Assessors then combine ratings across criteria and factor in the relative weights of the criteria, which enables them to calculate an overall benefit score for each option.

Like in many other areas in the public sector, the one proposed alternative option to the current way of doing things in a time of constraint is often across-the-board spending cuts and/or political negotiation. Yet such approaches fall well short when they are assessed in terms of both equity and efficiency. With a desire to improve our resource allocation practices at the Faculty of Medicine at Dalhousie

University, we applied the PBMA framework, using MCDA as a benefit measurement tool, to address the critical budget gap for FY 2011/2012. Although other organizations may have employed similar methods in the past, we were unable to find a substantive literature on this topic. Thus, we concluded that this novel project is the first time anyone has used the PBMA framework in a postsecondary education setting. In this article, we describe our case study applying the PBMA framework to address our projected deficit.

### Applying the PBMA Framework

Often, the aim with PBMA is to examine how resources might be reallocated to produce the most benefit, defined according to the key objectives of the given organization or program area. In our case study, our aim was to use a criteria-based approach to assess and rank the options for service reduction (i.e., areas within the Faculty of Medicine where we could cut spending) to meet a budget gap for FY 2011/2012. The total operating budget for the Faculty of Medicine for FY 2010/2011 was \$34.8M (all figures Canadian; \$1 CAD ≈ \$1 U.S.), with over 80% of the budget spent within the basic science and clinical science departments. The projected deficit by the end of FY 2011/2012 should no action be taken was \$1.4M, and that figure was expected to grow to over \$3.5M by FY 2015/2016.

Using the PBMA framework was one of several approaches that leaders at the Faculty of Medicine used to mitigate the projected deficit. For example, they also tasked a workflow solutions committee with identifying potential efficiency options in areas such as information technologies, Web solutions, customer service, finance, space utilization, and human resource management. Over the course of the project, we incorporated this committee's work into our PBMA exercise.

Our application of the PBMA framework followed a standard approach, as reported in the health care literature.<sup>13</sup>

#### Phase I

We began Phase I in February 2011 by holding information and training sessions for staff, the finance committee, and department heads, as well as by delineating the scope of the exercise

and structuring the project. An external consultant supported the implementation of our project, and a project management committee, which included the associate dean (operations and policy), the director of finance, and a department head representative, coordinated it. An advisory panel made up of the associate/assistant deans and department heads provided oversight for project activities. Carrying out the detailed activities of the project was a task group that included the associate dean (operations and policy), director of finance, director of governance and planning, five representative clinical and basic science department heads, an administrator representative, and the chair of the finance committee. The task group reported to the advisory panel, which in turn provided recommendations to the dean.

From the outset, the dean indicated that all departments were to participate. For the purposes of this project, we separated the programs and departments into three clusters: (1) clinical departments, (2) basic science departments, and (3) units/programs/support services. Each cluster was required to develop and submit disinvestment proposals totaling 9% of their budget. The director of finance selected this 9% target to ensure that the proposals totaled a savings greater than the projected deficit to allow for the fact that some projected savings likely would not be fully realized on implementation of the proposed changes.

#### Phase II

In March 2011, Phase II began, during which the task group developed both the assessment criteria and a formal rating scale (see Table 1). They also formalized the project guidelines and established a detailed time line and communication plan. In addition, the task group reviewed the current state of the budget and determined the mechanics for the implementation of the proposed changes. They considered the proposed changes as disinvestment proposals, or proposed actions that would reduce the operating costs of a program. These proposals came in two basic forms: (1) efficiency gains, whereby the services the department provided would remain the same but the resources they used would decrease, and (2) service reductions, whereby the resources the department used would decrease

Table 1

**Criteria and Rating Scale Used to Assess Service Reduction Proposals in a Priority Setting Process to Reduce Spending in the Faculty of Medicine at Dalhousie University, 2011**

Criterion	Definition	Weight	Scores and definitions			
			-3	-2	-1	0
Alignment with long-term vision	Extent to which the proposal takes the Faculty of Medicine away from its long-term vision	7	Significant negative impact	Moderate negative impact	Minimal negative impact	No negative impact
Alignment with current priorities (2010–2013)	Impact on the thematic priorities of the Faculty of Medicine (i.e., education, patient care/population health, research)	22	Significant negative impact	Moderate negative impact	Minimal negative impact	No negative impact
Integration of services	Impact across services; extent to which the proposed change creates a gap or a bottleneck that would affect capacity	8	Significant negative impact on capacity	Moderate negative impact on capacity	Minimal negative impact on capacity	No negative impact on capacity
Efficiency	Impact on the efficiency of functions performed and services provided (e.g., duplication, streamlining)	13	Significant negative impact on efficiency	Moderate negative impact on efficiency	Minimal negative impact on efficiency	No negative impact on efficiency
Number affected	Number of individuals (i.e., students, staff, faculty, external stakeholders) affected	8	More than 200	41–200	11–40	Less than 11
Magnitude of impact	Size of the impact on those affected	10	Significant negative impact	Moderate negative impact	Minimal negative impact	No negative impact
Disparities	Impact on priority health and social needs of the communities and marginalized populations served; impact on inequalities in access to education	6	Significant worsening of disparities	Moderate worsening of disparities	Minimal worsening of disparities	No worsening of disparities
Innovation	Impact on the creativity and learning culture of the Faculty of Medicine and on its leadership in knowledge transfer and the implementation of novel advances	11	Significant negative impact on innovation	Moderate negative impact on innovation	Minimal negative impact on innovation	No negative impact on innovation
Implementation challenges	Degree of expected resistance, political or other risks, capacity to enact the change, ability to reverse the change	8	Significant anticipated challenges	Moderate anticipated challenges	Minimal anticipated challenges	No anticipated challenges
Workplace	Impact on workplace, including staff satisfaction, teamwork, well-being and safety, personal and professional growth, equity policies, and morale	7	Significant negative overall impact	Moderate negative overall impact	Minimal negative overall impact	No negative overall impact

through a reduction in the quality or quantity of the services they provided. Departments submitted their proposals using a standard five-page business case template. In addition to these two types of disinvestment proposals, the task group also invited faculty to submit revenue-generating proposals.

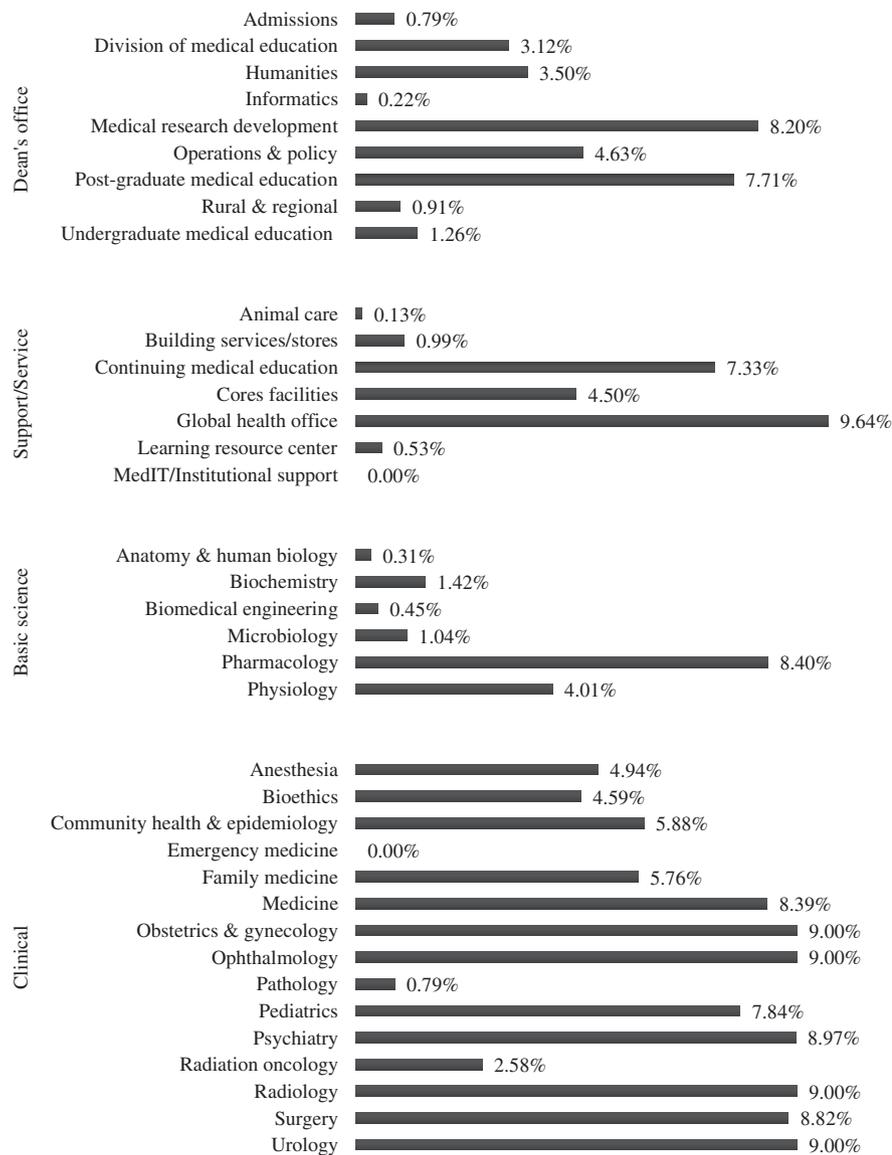
### Phase III

In April and May 2011, during Phase III, departments in each cluster developed their disinvestment proposals using the standard template to meet the 9% reduction target. Although the director of finance did not specify a minimum value for efficiency gains proposals, there was a minimum value of \$25,000 for service reduction proposals. The task group also encouraged faculty to collaborate with those in other programs to develop their proposals. The director of finance and associate dean worked closely with the

clusters during Phase III to monitor their progress and ensure that all parties fully understood expectations as the project proceeded.

Once the clusters had submitted their proposals, the task group assessed them against the established criteria to produce a ranked list of options along with recommendations to the advisory panel. The task group viewed each proposal as an option that they then compared with the other proposals before deciding which proposals to recommend implementing. In this way, the proposal assessment process moved away from an “across-the-board spending cuts” mentality to a fairer and more transparent process that measured the potential benefit loss to the Faculty of Medicine of each proposal against a set of predefined criteria. The task group reviewed the efficiency gains proposals to

ensure that the proposed changes could be implemented as they were written. The validated efficiency gains proposals were automatically ranked at the top of the list of overall disinvestment proposals, as they represented dominant strategies (i.e., lower cost changes with the same benefits; no impact on service). The task group assessed the service reduction proposals by applying the PBMA criteria and weights (see Table 1). They rated each proposal according to each of the criteria; they then calculated an overall score by multiplying the proposal’s rating for each criterion by the weight of the criterion and summing those scores across all the criteria. These ratings represented a summary evaluation of the ability of each proposal to assist the Faculty of Medicine in meeting its goals. Once the task group had calculated the ratings, they ranked the service reduction proposals and made funding recommendations. They then



**Figure 1** Percent disinvestment across two years by department of approved proposals in a priority setting process to reduce spending in the Faculty of Medicine at Dalhousie University, 2011.

sent the ratings, ranked list of proposals, and their recommendations to the advisory panel for review and approval. Finally, the advisory panel sent their final recommendations to the dean for his decision.

### Impact of Our PBMA Project

In total, the task group approved 27 service reduction proposals and 28 efficiency gains proposals, totaling approximately \$2.7M in savings across two years (see Appendix 1). In percentage terms, the proposals ranged from a 0% disinvestment to a 9.64% disinvestment across departments (see Figure 1). Additional Faculty of Medicine-wide efficiency gains savings proposed by the workflow solutions committee, along with

a limited number of revenue-generating proposals, brought the total savings to \$3.1M. A multiyear assessment indicated that the annual savings generated by implementing these proposed changes would be about \$1M over the next two fiscal years, which provided the Faculty of Medicine additional leeway in their financial outlook.

The task group approved the majority of the service reduction proposals submitted because they found the benefits loss to the Faculty of Medicine to be reasonable when they assessed the proposals using the formal rating tool. On a scale of 0 to -300, very few proposals ranked below -200, and the vast majority ranked higher than -125, suggesting that the

benefits loss would be minimal. The task group also approved nearly every efficiency gains proposal. They reviewed these proposals for validity and gave them a yes/no approval.

Following the task group's initial ranking of the submitted proposals, we determined that some programs were attempting to game the project. Instead of submitting valid and realistic proposals like their colleagues, some programs submitted no proposals and others submitted proposals that were not credible. We flagged these proposals, and, on consultation with the advisory panel and ultimately the dean, we agreed that one program would be exempt because of mitigating circumstances, three programs would be required to resubmit more credible proposals, and five programs would be informally exempt because they were undergoing restructuring at the time but would be expected to produce disinvestment options outside of the PBMA process.

### Implications of our PBMA Project

We introduced the PBMA priority setting framework within the Faculty of Medicine at Dalhousie University to provide guidance for leaders in addressing a worsening budget deficit. The PBMA framework provided an explicit, rigorous, and transparent approach to making resource allocation decisions. It acted as the framework for assessing the net impact of possible changes (direct or indirect) to the current configuration of services on the benefits those services produced. The task group measured that net impact by rating each proposed change (e.g., service expansion or reduction) against a set of criteria that they developed specifically for this process.<sup>7</sup> These criteria linked directly to the strategic priorities and the vision of the Faculty of Medicine, including achieving "value for money," a critical goal for postsecondary education institutions to reach longer-term sustainability in a time of overall financial constraints.<sup>14</sup>

Although the Faculty of Medicine was in a much better position financially after only one year as a result of our PBMA project, the task group did ask what impact, if any, the proposed changes would have on the quality of the services provided. They concluded

that the quality of the services would be negatively affected. However, most of the service reduction proposals did not score particularly low on the ratings scale, meaning that the negative impact was not great. The task group did not recommend implementing those proposals with particularly low scores, for which they deemed the impact to be quite high. Still, without an explicit evaluation process, the task group was unable to know the precise nature of the negative consequences of the service reduction proposals. This uncertainty is not new—In the mid-1990s, when the Canadian Faculties of Medicine reported drastic cuts in funding, they could not provide clear indication of the impact of the cuts relative to the goals of the medical schools affected.<sup>15</sup>

In contrast, the efficiency gains proposals had no negative impact. One may ask whether these opportunities were “low hanging fruit” and why we needed a formal process to achieve these gains. In fact, this point arises often in priority setting discussions, and the response is a simple one—In bureaucratic organizations, often a formal process with a change management component is needed to enact even the most obvious changes. Over time, however, the more obvious proposals are implemented, and the organization is forced to look at genuine service reduction options either to erase a pending deficit or to make available resources, thereby reallocating funding to areas for greater perceived benefit.

We conducted a small evaluation with key stakeholders within the Faculty of Medicine and found that the majority of participants would like the project to continue. In addition, faculty morale appeared to have improved, despite the Faculty of Medicine’s uncertain financial future, because of the positive collaborations and partnerships that developed through this project. Specifically, faculty members and department heads were required to work together, which is often difficult in academic contexts. Yet, at our institution, it became a very fruitful endeavor that resulted not only in the task group identifying where standardization across the Faculty of Medicine might improve efficiency but also in the sense of having a shared mission that developed to meet the institution’s large deficit. Still, several respondents to our evaluation indicated

that future process improvements should focus on how the dean communicates his final decisions as well as how to better encourage faculty members to participate. Faculty members in several of the clinical departments also felt that the complexity of their funding with respect to both university and clinically generated revenue should garner further consideration in this type of process. Overall, respondents were very clear that they preferred the PBMA process to across-the-board spending cuts.

Several features of our project are noteworthy. First, MCDA is an important tool for public-sector decision making<sup>10</sup> and was viewed favorably by members of the Faculty of Medicine, a postsecondary education institution. With MCDA, the key is to ensure that the criteria are well defined, that they do not overlap, and that they genuinely reflect the main objectives of the organization. Second, the principles of fair process, as espoused in the health care priority setting literature,<sup>16</sup> must be upheld. We ensured that the process at our institution was as transparent as possible, so that the stakeholders had a clear understanding of the criteria, the decisions being made, and the rationale for those decisions. Third, strong support from institutional leaders is an important factor for success in any priority setting activity.<sup>17</sup> For us, the dean and senior administrators provided strong support for the project. In addition, we periodically updated Dalhousie University administrators on our work and informed them of the final decisions. Fourth, apart from hiring external consultants to support the project, staff, faculty, department heads, and administrators conducted all the work as part of their day-to-day activities, and thus the project required only very few additional resources. Finally, another key factor to the success of our project was that the faculty previously had taken part in a mission-based funding approach project that aligned resource allocation with outcomes achieved across academic departments.<sup>18</sup> Although this approach had been used in the early 2000s during the tenure of a previous administration, we felt that the faculty would be more receptive to a PBMA approach because they had previously used another explicit, proactive budgeting tool.

As with any process of this nature, we faced some initial obstacles. One of the

central tenets of our project was to ensure equal participation among those involved in the process (as opposed to equal, across-the-board cuts in funding). That is, most within the Faculty of Medicine understood that across-the-board cuts would not necessarily affect their departments equally, as this approach does not recognize the departments’ different financial starting points or the disparate effects that loss of funding would have on each. Still, all faculty members agreed that all departments should take part in the project. When some programs did not initially provide proposals (or in some cases credible proposals), a number of the academic department heads voiced concern. Although the dean had to require that specific departments participate, the project did continue. When exceptions were granted, they were done so in full transparency and in the full knowledge of the advisory panel.

Because of the tight time constraints initiating this new project, we encouraged all stakeholders to do the best they could. The literature suggests that, over time as individuals become familiar with the concepts and tools of the process and as activities become more streamlined and integrated fully into the budget cycle, the process provides a mechanism for successful resource reallocation (i.e., shifting between disinvestment and investment options).<sup>19,20</sup> When the focus of the process is solely on disinvestment, it implies that no new resources will be forthcoming (i.e., the anticipated financial shortfall must truly be addressed) and that stakeholders must buy in to the task at hand, which is a challenge to overcome, especially in an academic setting where faculty tend to prioritize their own research program over the mission of the university.

Over the course of FY 2011/2012, the director of finance tracked the progress of the proposed changes, and 72% of the projected savings were realized. This success speaks to the importance of setting targets beyond the needed reduction in spending because inevitably some projected savings will not be realized. Even still, we met the short-term financial obligations of the Faculty of Medicine in FY 2011/2012, and, because of the annual savings and future-year reductions, we eliminated the longer-term projected deficit for FY 2015/2016.

## In Conclusion

By engaging faculty members and staff and drawing on a priority setting approach that has received much attention in health services delivery organizations, the Faculty of Medicine at Dalhousie University was able to meet its financial obligations, including evidence-based service reductions, in an open and transparent manner. At its core, the project relied on formal assessment criteria against which proposals for disinvestment were evaluated. Within the Faculty of Medicine, this priority setting work was embedded in the most recent iteration of the strategic plan (2012); thus, going forward, the tools we outlined here will be used to address fiscal challenges as well as to provide a mechanism for shifting or reallocating resources in an explicit manner. In addition, this work should serve as a useful example for other academic institutions that need to set priorities within fiscal constraints.

*Funding/Support:* The study portion of the article was funded by the Dalhousie University Faculty of Medicine.

*Other disclosures:* None.

*Ethical approval:* Not applicable.

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## Appendix 1

### Summary of Approved Proposals in a Priority Setting Process to Reduce Spending in the Faculty of Medicine at Dalhousie University, 2011

#### Efficiency gains proposals:

- Basic science: centralized start-up funds
- Biomedical engineering: purchase phones
- Building services: scale down laboratory renovations
- Building services: coordinate small jobs with facilities management
- Continuing medical education (CME): reduce printed course materials
- Communications: restructure
- Centralized operation of research equipment and supports: implement 4.5% reduction for next two years
- Dean's office: post retirements
- Division of Medical Education: eliminate outsourced Web site design
- Emergency medicine: reduce staff training and travel
- Global health: restructure office (implemented)
- Medicine: implement 9% overall reduction
- Microbiology: increase staff replacement flexibility
- Obstetrics–gynecology: implement 9% overall reduction
- Operational endowment spending
- Ophthalmology: implement 9% overall reduction

(Appendix continues)

## Appendix 1, Continued

- Postgraduate medical education (PGME): reduce contracted services and external computing services
- PGME: reduce program salary costs by 50%
- Psychiatry: reduce research support
- Radiology: implement 9% overall reduction
- Radiation oncology: head travel
- Radiation oncology: conference travel
- Student affairs (letter)
- Surgery: align salaries and functions
- Undergraduate medical education (UGME): reduce purchase of online resources
- Urology: implement 9% overall reduction
- Workflow solutions: administrative reductions
- Cadaver efficiencies

### Service reductions proposals:

- Anesthesia: reduce secretarial salary support
- Anatomy: retirements and recruitments
- Biochemistry: reorganize teaching program to reduce limited-term appointments
- Bioethics: reduce administrator position to 0.5 full-time equivalent (FTE) (implemented)
- Outsource central stores
- Community health and epidemiology: eliminate community health and epidemiology graduate student scholarship
- Community health and epidemiology: defer biostats recruitment for two years
- CME: reduce honoraria paid to Faculty of Medicine members
- Departmental surveys
- DME: eliminate research associate positions
- External headship recruitment
- Family medicine: retirements and nonreplacement of two faculty members
- Family medicine: divest of School of Pharmacy faculty salary
- Family medicine: eliminate funding for temporary salary support
- Family medicine: reduce preceptor payments
- Global health: office staff share
- MedIT: eliminate integrated services digital network—lines based video conferencing
- Pathology: review histology lab
- Pathology: reduce residents' and graduate students' travel fund
- Pediatrics: internal reallocation of endowed chair
- Pharmacology: reduce faculty and staff complements
- Physiology: defer recruitment of 1.65 FTE faculty for two years
- Psychiatry: reduce research summer studentships
- Psychiatry: research faculty reduction
- Research: eliminate assistant dean position
- UGME: eliminate or reduce rural week
- UGME: reduce preceptor payments

### Revenue-generating proposals:

- Learning resource center
- Microbiology
- UGME
- PGME visa trainee electives

# AUTHOR QUERIES

**AUTHOR PLEASE ANSWER ALL QUERIES**

No queries.