

# The hidden cost of medical student education: an exploratory study

R. Kim Oates<sup>1,2</sup> MD, DSc, MHP, FRACP, Emeritus Professor

Kerry J. Goulston<sup>1</sup> MD, FRACP, Emeritus Professor

<sup>1</sup>Sydney Medical School, University of Sydney, Room 312, 92-94 Parramatta Road, Sydney, NSW 2006, Australia.

<sup>2</sup>Corresponding author. Email: kim.oates@sydney.edu.au

## Abstract

**Objective.** To examine the hidden cost of medical education at the Sydney Medical School, for which the University of Sydney does not pay.

**Methods.** All face-to-face teaching provided for students in the Sydney University Postgraduate Medical Program was listed under two headings: teaching by university employed staff; and teaching by other health providers not paid by the university. All teaching hours in 2010 were extracted from detailed timetables and categorised under these headings. Time spent in lecture preparation and exam marking was included. Students were sampled to obtain information about additional teaching that was not timetabled.

**Results.** Teaching by university paid staff accounted for 59 and 61% of face-to-face teaching costs in years 1 and 2 of the 4-year Graduate Program, but only 8% in the final 2 years. The cost of medical education provided by the university, including infrastructure costs was \$56 250 per student per year in 2010. An additional \$34 326 worth of teaching per student per year was provided by teachers not paid by the university.

**Conclusion.** The true cost of medical education is the cost of education met by the university plus the value of teaching currently provided by government funded health providers and honorary teachers. In 2010, 38% of the medical education cost at Sydney University was provided at no cost to the University. As government health departments seek to trim rising health expenditure, there is no guarantee that they will continue to contribute to medical education without passing this cost on to universities.

**What is known about this topic?** Some medical student teaching is provided by teachers who may be employed by a government health provider or who are honorary teachers. There is no cost to the university for this teaching.

**What does this paper add?** An estimate of the total value of teaching provided to students at Sydney Medical School, for which the university does not pay, is approximately \$34 000 per student per year, compared with the total cost of approximately \$56 000 per student per year incurred by the university.

**What are the implications?** Medical education is a partnership between the university, the government health sector and honorary teachers. Without contributions by non-university paid staff, the cost of medical education would be unsustainable.

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## Introduction

It has long been known that the cost of medical student education can be divided into two parts: (1) the cost to the medical school and (2) the cost to the government funded health service.<sup>1</sup> However, while information is available about the cost to a university to educate a medical student, there are very few data about the value of the contributions to medical student education made by government funded health providers, for which the university does not pay. This is the hidden cost of medical education.

A recent study from Sydney Medical School showed that the cost to the University of Sydney to educate a student in its 4-year Graduate Medical Program averaged \$A56 250 per student for each year of the course.<sup>2</sup> This figure is comparable to the amount of \$A50–\$1 000 per student per year calculated across a selection of medical schools in Australia and New Zealand.<sup>3</sup>

Studies from North American universities have shown that total medical student education costs range from \$US69 992 to \$US93 000 per student per year. As these studies were published in 1997 they represent cost at or before that time.<sup>4–6</sup> Current costs would be considerably higher, particularly as the cost of undergraduate medical education has been rising at more than twice the rate of inflation.<sup>7</sup>

What these studies do not take into account is the value of teaching provided by government employees and in some cases by clinicians in private practice. This occurs throughout most medical courses, particularly in teaching hospitals. It includes teaching by hospital-paid medical, allied health and nursing staff in lectures, problem-based learning sessions, small group tutorials at the bedside, in clinics, in skills laboratories and in community settings as well as other opportunistic teaching times. Neither do they take into account the fact that ward rounds,

operating sessions, clinics, specialist and general practitioner consulting room sessions take longer when medical students are present<sup>8,9</sup> so that any estimate of the contribution to medical student education by non-university paid staff should also take account of this extra time.

This study examined the hidden costs of medical education in the 4-year Graduate Program at the University of Sydney during 2010. It also compared the relative dollar contribution by university paid staff and non-university paid staff in the first two years of the course and in the 2 subsequent clinical years during which students are based in a clinical school teaching hospital.

## Methods

Students at Sydney Medical School spend 1 day each week and a block of 5 weeks at a clinical school in each of their first 2 years. All other teaching in the first 2 years is on the university campus. All teaching in the last 2 years occurs in the clinical schools.

All teaching hours in 2010 were extracted from the detailed timetables for teaching on the university campus and three of the five metropolitan clinical schools, which together taught 67% of students in the final 2 years. The total cost of face-to-face teaching on campus by university paid and non-university paid teachers for each of the first 2 years was calculated and divided by the total number of students in that year to obtain the cost per student. Similarly, the cost of teaching in the clinical schools for each year was divided by the number of students at that clinical school to determine the average cost per student.

A template was developed for each separate part of the program. Each template covered all timetabled teaching, clinical placements, assessments and attendances in clinics, laboratories, clinical skills centres and external sites. Research placements and electives were excluded as many are conducted overseas and there is great variation in the amount of supervision and teaching. For each session or group of sessions the type of teaching, number of students in the group and category of teacher was entered into a spreadsheet. Wide ranging consultations with the supervisors of students in their third and fourth year clinical placements showed that an average of 3 hours per week of one-on-one teaching was provided for each student.

In addition, the heads of major disciplines in each clinical school were asked to survey their members to estimate the extra time taken when students are present in clinics, operating theatres and on ward rounds. The range was from 15% extra time in clinics to 30% in general practice. This information was used to adjust the hours of teaching.

To obtain the additional teaching time not captured by the timetable, a convenience sample of 25% of year 3 and 4 students was asked to estimate the amount of additional non-supervised, untimetable face-to-face teaching they received in any 1 week, such as one-to-one teaching by a registrar, consultant or nurse. This ranged from 1 to 3 additional hours per week and was included in the calculations.

Based on discussion with academic and clinical teachers, for each hour of lecturing 2 additional hours were allocated for lecture preparation, revision and travel time. For each 1 hour of face-to-face clinical tutorial teaching an additional 1 hour for preparation, patient selection and post-tutorial debriefing was added. Clinical

assessments were costed as if they were tutorials. Costs associated with setting and marking written assessments were based on hours worked.

Three broad categories were used to calculate the value of time spent teaching:

- (1) Direct salary costs borne by the university. As many of the academics who teach this course are at a senior level, the midpoint of associate professor was used as the average academic salary. Some general practitioners were paid an hourly rate by the University, based on the NSW Health general practitioner award rate. University paid academics working in hospitals receive an additional loading from NSW Health for their hospital clinical work. This loading is not related to university work and so was not included in the calculation.
- (2) Costs not carried by the university, such as salaried consultants, visiting medical officers, junior hospital staff, nursing and allied health staff. These salaries are all paid by the NSW Department of Health with costs based on the relevant industrial award.
- (3) Value of honorary teaching. Honorary teachers were defined as teachers who are not paid by the university or by the government. An estimate of the value of honorary teaching was based on the remuneration honorary teachers would receive if they were paid at their appropriate level, based on the relevant industrial awards.

The study was approved by the University of Sydney Human Ethics Research Committee.

## Results

In the first 2 years of the course, which are largely taught on the university campus, the value of face-to-face teaching by university paid staff accounts for more than half of the total cost (see Table 1). The university paid component is \$8597 (59%) out of a total of \$14 460 in year 1 and \$13 666 (61%) out of a total of \$22 494 in the second year. The table also shows that the university paid component of face-to-face teaching and assessment is far less in the final 2 years than in the first 2 years, being \$10 880 (8%) out of a total of \$133 495.

The value of time for preparation and marking of written assessment by university paid and non-paid staff is a relatively small proportion of the total cost comprising \$3944 out of a total of \$169 449 (2.3%) over the 4 years.

The table shows that the total average cost of face-to-face teaching for one student for one year is \$42 632. The value of teaching contributed by those not paid by the university (\$34 426) is four times the university contribution of \$8286.

## Discussion

This study provides new information that shows the true cost of medical education in the Sydney Medical School Graduate Medical Program. While this study represents a single medical school, the principle of including the cost of face-to-face teaching for which a university does not pay would apply to many other medical schools. The true cost of medical student education is a combination of the total cost for medical education incurred by the university<sup>2</sup> (\$A56 250 per year) plus the value of the time

**Table 1. Cost components and average cost of face-to-face teaching and assessment in each year of the 4-year medical course at Sydney Medical School in 2010**

	Paid by the university (A\$)	Not paid by the university (A\$)	Total (A\$)
Year 1			
Campus	6415	644	7059
Clinical schools	1915	4836	6751
Written assessment	267	383	650
Total year 1	8597	5863	14 460
Year 2			
Campus	7415	4004	11 419
Clinical schools	5984	4441	10 425
Written assessment	267	383	650
Total year 2	13 666	8828	22 494
Years 3 & 4			
Clinical schools	9096	121 755	130 851
Written assessment	1784	860	2644
Total years 3 & 4	10 880	122 615	133 495
Total cost for 4 years	33 143	137 306	169 449
Average per year	8286	34 326	42 632

committed to face-to-face teaching by non-university paid teachers (\$A34 326 per year) averaging \$A90 676 per student for each year of the 4-year medical course.

This finding is very similar to that of Franzini and colleagues<sup>10</sup> who showed in 1997 that in a 4-year course the annual student instruction-only cost was \$US43 994 but the true annual total cost was \$US90 660.

The payments the clinical schools receive from the university for clinical school facilities were not included in these calculations as they are more appropriately seen as costs to the university and were included in the \$A56 250 per annum cost per student in our study of medical education costs met by the university.<sup>2</sup>

We estimated the value of teaching provided by honorary teachers based on the remuneration they would have received if they were paid for their teaching. Universities are indebted to honorary teachers who receive no significant recompense. Some clinical schools provide their honorary teachers with parking privileges at the hospital and access to the university computing system. This modest way in which their teaching contribution is recognised is of small monetary value and was not included in the calculations.

The discrepancy between the previously documented total university component for medical student education of \$A56 250 per year<sup>2</sup> and the university component solely for face-to-face teaching of \$A8035 is explained by the significant costs required to underpin a medical program. These include the physical facilities, their maintenance and depreciation, technical and IT support, administrative support, the component of research that informs teaching, consumables, equipment and utilities. These costs are an essential component of medical education.<sup>10</sup> This expenditure is required not only on the university campus, but also in the clinical schools and their associated hospitals and community health facilities, including general practice.

As this study is based on a single university, the detailed results may not necessarily be able to be generalised but they do highlight the fact, which is common to many Australian medical schools,

that there is a hidden cost of medical education provided by teachers who are not paid by the university. Another limitation is that some calculations were based on estimates such as time spent preparing teaching sessions and for untimetabled teaching, estimates which applied to university paid and non-university paid staff. However the total cost of non-university teaching is so high, that even in the unlikely event that these estimates inadvertently inflated the unpaid teaching figure by several percentage points the hidden cost would still be considerable.

This analysis shows that the total cost of face-to-face teaching and assessment (university and non-university components) in the last 2 years of the medical course represents 79% of the total face-to-face teaching costs. This reflects the fact that while much teaching is given in lectures or large practical group demonstrations, the majority of teaching in the final 2 years is in small group tutorials as well as one-to-one teaching. This is similar to the findings of Jones & Korn<sup>4</sup> who showed that the cost of the final 2 years of medical school represents close to 90% of the total cost of medical student education.

Although the value of teaching currently provided by non-university paid staff is not borne by universities, there is no guarantee that the status quo will remain. Already there is a view that the current funding arrangements for higher education which, apart from honorary teachers, have a large component borne by government, are not sustainable.<sup>11</sup> As government health departments seek to trim their rising expenditure, they may well look to universities to recompense them for their contribution to medical student education. The true cost of medical education (an additional 65% on top of the university cost) would place an insurmountable burden on medical schools unless government health departments regard their contribution as a worthwhile investment in the education of its future medical workforce.

### Competing interests

The authors declare there are no competing interests.

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