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# The Current State of Medical School Education in Bioethics, Health Law, and Health Economics

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The standards for medical education in the United States now go above and beyond traditional basic science and clinical subjects.<sup>1</sup> Bioethics, health law, and health economics are recognized as important parts of translating physicians' technical competence in medicine into effective research, administration, and medical care for patients.<sup>2</sup> The Liaison Committee on Medical Education (LCME), which establishes certification requirements for medical schools, requires all medical schools to include bioethics in their curricula.<sup>3</sup> Furthermore, issues such as the growth of genetic testing, end-of-life decision making for a burgeoning elderly population, confidentiality in the era of electronic medical records, and allocation of scarce medical resources make bioethics training clearly necessary for physicians. Although 16 percent of the United States GDP is devoted to health care,<sup>4</sup> the LCME does not currently mandate training in health law or health economics. Furthermore, as the Schiavo case and HIPAA remind us, legal directives influence medical practice in areas such as billing, confidentiality, and end-of-life care.<sup>5</sup> Physicians thus need training in health law and health economics as well. Given recent calls for a reevaluation of medical education<sup>6</sup> and the shift from separate courses towards integrated curricula,<sup>7</sup> this is a crucial time to assess the attention that bioethics, health law, and health economics receive in medical school curricula and the background of professors teaching these topics.

The available data regarding bioethics, health law, and economics education in medical school is modest. In bioethics, there have been three recent surveys<sup>8</sup> and a review essay.<sup>9</sup> These data show wide variation, with some medical schools claiming to offer over 200 hours of formal bioethics instruction, while others only touch on bioethics in passing during larger courses.<sup>10</sup> Despite the importance of understanding how instructor qualifications affect teaching,<sup>11</sup> the fact that there is "no agreement on the qualifications to call oneself an ethicist" has prevented these surveys from exploring instructor qualifications effectively.<sup>12</sup> The most recent assessment of health law instruction was conducted over a decade ago. It revealed that 82 percent of medical schools offer courses in health law, but only 33 percent had a discrete health law course.<sup>13</sup> A more recent review, which discussed required courses, suggested that 75 percent of schools require health law as part of a larger course, while only nine percent require a separate course in health law.<sup>14</sup> While there have been no major assessments of health economics instruction in medical schools, the Association of American Medical Colleges (AAMC) reports that 80 percent of medical schools require instruction in "medical socioeconomic," without further elaboration.<sup>15</sup>

To accurately assess the current state of education in bioethics, health law, and health economics, we surveyed all AAMC-affiliated medical schools in the United States, focusing on three critical areas

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for effective learning – the amount of time devoted to these topics, the years during the four-year medical school curriculum in which instruction is provided, and the expertise of the instructors. We focus on required hours rather than available coursework in order to determine whether all medical students not only have access to courses in these topics, but are exposed to them during the course of medical education.

## Methods

A five-page questionnaire was sent to all 125 AAMC-affiliated medical schools in the United States. Questionnaires were sent by electronic mail to the dean of education or equivalent, with follow-ups by fax and telephone where necessary. This survey requested the following information for each course taught in bioethics, health law, and health economics during the four years of medical education: (1) the course name, (2) the total number of contact hours for the course, (3) the year of medical school during which the course is taught, (4) whether the course is required, and (5) the name of the course's main instructor. Contact hours were requested both for integrated curricula (where the respondent was asked to provide an estimate of the proportion of time spent on bioethics, health law, or health economics), and for stand-alone courses in the three subjects. Overall, 62 schools (50 percent) responded to the survey, with three providing information on contact hours that could not be used either because data was provided in terms of credits rather than hours or because only total hour data was provided without indication of how many of the hours were in bioethics, health law, or health economics separately. All analyses are therefore limited to the 59 schools that provided data in the correct format.

Using instructor names, a PubMed (<http://www.pubmed.com/>) search was conducted to determine the total number of peer-reviewed journal publications from January 1, 1990, to January 1, 2007, for each identified instructor. Based on the title and abstract of each identified publication, a rater coded whether the publication was relevant to the subject – bioethics, health law, or health economics – being taught. The number of relevant publications for each instructor was recorded. Summary statistics were calculated for continuous (means, standard deviations, quantiles) and dichotomous (number

and percent) variables. Differences between groups were assessed with the Wilcoxon rank sum test.

This survey was deemed exempt from IRB review by the National Institutes of Health Office of Human Subjects Research.

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## Results

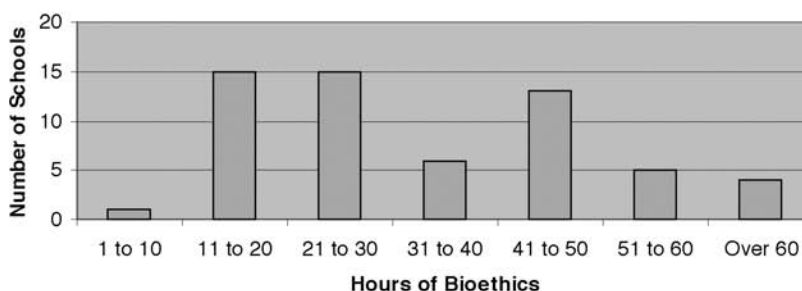
### Overall

Of the medical schools in the analysis dataset, 22 (37 percent) were private and 37 (63 percent) public; 19 (32 percent) were located in the Northeast, 16 (27 percent) in the Midwest, 6 (10 percent) in the West, and 18 (31 percent) in the South. These figures are comparable to the status and geographic distribution of the 125 AAMC-affiliated medical schools.<sup>16</sup>

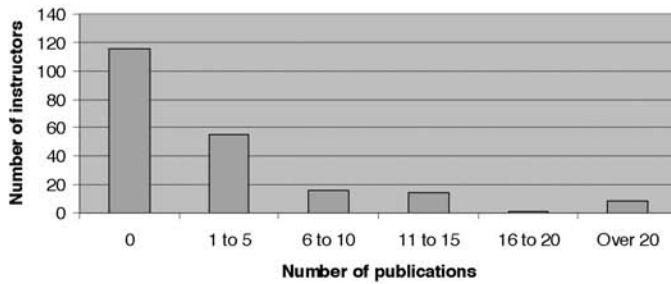
### Bioethics

In compliance with the LCME requirements, all 59 medical schools in the dataset required coursework in bioethics, as did the three with incomplete data. Over all four years of medical education, medical schools required an average of 35.6 hours of instruction in bioethics (sd=23.6, range 9.0 to 125 hours, median 27.5 hours) (Figure 1a). Public medical schools required fewer hours (34.6) than private medical schools (37.4) (Table 1,  $p=0.81$ ). The medical schools with stand-alone bioethics courses required an average 39.6 hours of bioethics instruction, while those schools with integrated curricula averaged 34.4 hours ( $p=0.49$ ).

**Figure 1a. Required contact hours in bioethics over 4 years**



**Figure 1b. Bioethics publications by instructors of required bioethics courses**



Bioethics instruction was concentrated in the first year, where on average 46 percent of the total hours occurred. Therefore, very few hours occurred during clinical rotations. On average, 15.9 hours were taught in year one, 11.2 hours in year two, 6.5 hours in year three, and 2.0 hours in year four.

Of the 210 bioethics instructors identified who teach required courses, 97 (46.1 percent) had at least one bioethics-relevant publication identified in PubMed since January 1, 1990 (Figure 1b). Among these 97, the median number of relevant publications was three (range 1-83), with 56.7 percent (55) having 5 or fewer and 23.7 percent (23) having more than 10 publications.

*Health Law*

Overall, 35 (59 percent) of the responding medical schools required coursework in health law. Over the four years of medical school, these schools required a

median of five hours (range 2 to 60 hours, mean 10.3 hours) of health law education (Figure 2a). Public medical schools required an average of 9.5 hours while private medical schools averaged 12.7 hours (Table 1) (p=0.76). All schools requiring health law required it only as part of a larger, integrated course.

The average number of hours devoted to health law instruction was fairly uniformly distributed over the four years of medical school education. An average of 2.7 hours were taught in year one, 3.8 hours in year two, 1.8 hours in year three, and 2.2 hours in year four.

Of the 96 health law instructors identified who teach required courses, 25 (36.5 percent) had at least one health law-relevant publication identified in PubMed since January 1, 1990 (Figure 2b). Among these 25, the median number of publications was three (range 1-23), with 65.7 percent (23) having five or fewer, while 14.2 percent (5) had more than 10 publications relevant to health law.

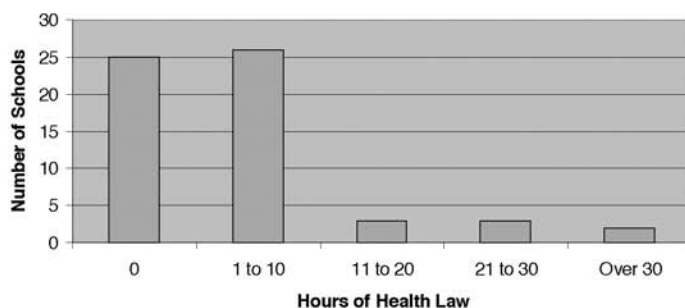
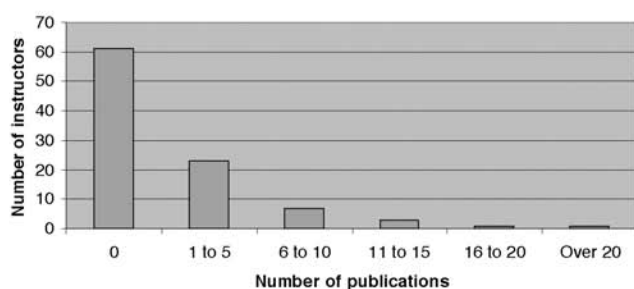
*Health Economics*

Overall, 39 (66 percent) medical schools required coursework in health economics. During the four years, these medical schools required an average of 9.4 hours (range 0.5 to 32 hours, median 8 hours) of health economics education (Figure 2a). Public medical schools required an average of 8.3 hours, with private schools requiring 11.3 (Table 1) (p=0.18). All schools requiring health economics required it only as part of a larger, integrated course.

Table 1

**The Teaching of Bioethics, Health Law, and Health Economics in American Medical Schools**

		<b>Bioethics</b>	<b>Health Law</b>	<b>Health Economics</b>
Medical Schools Requiring Some Hours of Instruction	All Schools (N=59)	59	35 (59.3%)	39 (66.1%)
	Public (N=37)	37	26 (70.3%)	24 (64.9%)
	Private (N=22)	22	9 (40.9%)	15 (68.1%)
Number of Required Hours of Instruction (mean±sd)	All Schools	35.6 ± 23.6	10.3 ± 13.3	9.4 ± 7.4
	Public	34.6 ± 21.4	9.5 ± 11.5	8.3 ± 7.5
	Private	37.4 ± 27.3	12.7 ± 18.3	11.3 ± 7.3

**Figure 2a. Required contact hours in health law over 4 years****Figure 2b. Health law publications by instructors of required health law courses**

Health economics instruction tended to be concentrated in years one ( $5.0 \pm 7.2$ ) and two ( $3.1 \pm 4.5$ ), with an average of less than one hour in each of the last two years of education.

Of the 116 health economics instructors identified who teach required courses, 32 (27.6 percent) had at least one health economics-relevant publication identified in PubMed (Figure 2b). Among these 32, the median number of publications was three (range 1-97, mean 10.9), with 68.8 percent (22) having five or fewer, while 25.0 percent (8) had more than 10 publications relevant to health economics.

## Discussion

This study suggests that the number of required hours of instruction in bioethics, health law, and health economics in medical schools comprises less than two percent of the medical school curriculum. Indeed, of the more than 3500 hours of instruction during medical school,<sup>17</sup> an average of less than 60 hours are devoted to all of bioethics, health law and health economics *combined*. Most of the instruction is during the pre-clinical courses, leaving very little instructional time when students are experiencing bioethical or legal challenges during their hands-on, clinical training. More than 60 percent of the instructors in bioethics, health law, and health economics have not published since 1990 on the topic they are teaching.

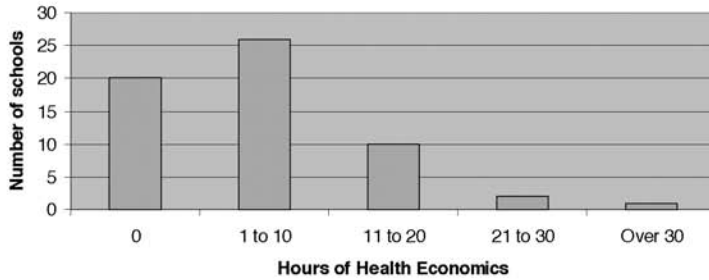
All medical schools required bioethics, and the average number of required hours of bioethics that we found over the four years of medical education was 35.6 hours. Importantly, while modest, the time devoted to teaching bioethics may be increasing. One survey conducted three years ago reported a mean of 25 hours.<sup>18</sup> This increase is promising, but still constitutes about one percent of total medical school instructional time.

Of some concern is that on average most of the instruction in bioethics occurs in the first two years of preclinical training, before medical students have experienced actual dilemmas related to patient care. This time distribution precludes consideration of bioethical issues at the time when students are most engaged with the actual issues, so-called “teachable moments.” It also does not encourage reinforcement of the lessons by experience and explicit reflection on the experience. The fact that less than half of the bioethics instructors have published even a single article relevant to bioethics raises some concerns. While some superb teachers do not publish in their relevant discipline, this result suggests that many

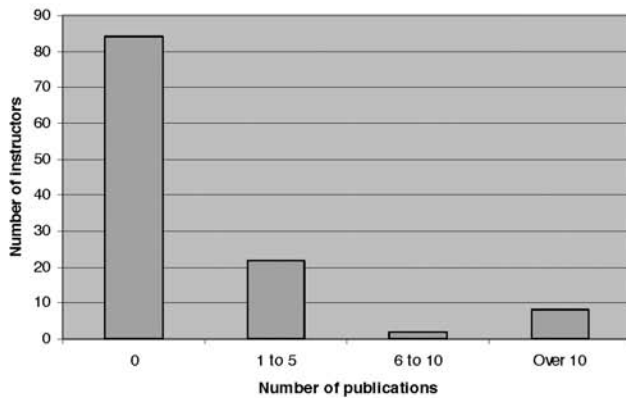
people teaching bioethics in medical schools do not have it as their primary academic focus. We recognize that counting publications in PubMed is a crude measure of expertise. However, instructors in other areas of medical education are expected to conduct research and publish in their field; the same should be true in bioethics as well as health law and health economics.

For health law, the results were of greater concern. Only 59 percent of the medical schools required a health law course; among these schools, an average of 10 hours was required over the entire four years. In contrast, the AAMC indicates that 83 percent (104 of 125) of medical schools currently include medical jurisprudence training in required courses.<sup>19</sup> This discrepancy may be due in part to respondent confusion; some schools that reported no hours may have intended to report that they did not know the extent of their health law curriculum. The AAMC statistics also may reflect courses that only include medical jurisprudence incidentally. All the required health law courses were part of larger courses, continuing the trend reported in previous surveys which found that in 1995, 33 percent of the courses were separate health law courses,<sup>20</sup> while by 1999, only 14.3 percent were separate courses.<sup>21</sup> The total number of hours required was very small, less than 0.5 percent of all hours spent in medical education. Finally, even more obviously

**Figure 3a. Required contact hours in health economics over 4 years**



**Figure 3b. Health economics publications by instructors of required health economics courses**



than in bioethics, the majority of the instructors do not seem to publish research relevant to health law.

The amount of instruction devoted to health economics during medical school largely mirrors health law. While 66 percent of the responding schools required some coursework in health economics, the average number of hours was under 10, and over 70 percent of the instructors had no publications relevant to health economics.

These data suggest several possible changes for medical education. First, the cumulative amount of time devoted to bioethics, health law, and health economics does not appear to be commensurate with their importance. In an era when medical practice, research, and administration is so heavily influenced by bioethics, the law, and economic realities, *devoting* fewer than 60 hours to these subjects *combined* over four years seems hard to justify. A previous survey of raised the worry that “[w]ith most medical schools allocating less than 40 hours to teaching bioethics over a four-year period, students may not be adequately prepared to meet the challenges of clinical practice.”<sup>22</sup> Given our results, we would extend this observation to encompass health law and economics as well.

Second, the heavy concentration of training in bioethics, health law, and health economics during the preclinical years seems mistaken. More time should be devoted to these topics during the clinical rotations when teachable moments occur. While caring for patients, students will confront bioethical dilemmas or questions about the relevant laws, making the instruction more salient to the rest of their medical education. Furthermore, during clinical rotations, examination of the actual cost of tests and procedures – and the relationship between costs and impact on medical decision making and patient outcomes – might be educationally discussed.

Third, these data suggest the need to increase the qualifications of instructors teaching bioethics, health law, and health economics in medical school. Bioethics, health law, and health economics are distinct disciplines with their own knowledge bases and extensive scholarly publications. While physicians with avocational interests in these topics might have been competent to teach them decades ago, it seems untenable now not to have individuals with professional expertise and research interests in these disciplines teach courses.

This study has several limitations. First, the response rate was 50 percent and the results may not be generalizable. Second, some competent instructors may not conduct research or publish in the area in which they are teaching. Finally, there is no objective or consensus standard on how many hours of medical school instructional time should be required for bioethics, health law, or health economics or what constitutes a qualified instructor in bioethics, health law, or health economics. The assessments that the number of hours for these topics is too low and that having more than half of instructors in each discipline with no publications in the discipline seems untenable are value judgments about which reasonable people can disagree.

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**References**

1. B. Barzansky and S. I. Etzel, “Educational Programs in US Medical Schools, 2002-2003,” *JAMA* 290, no. 9 (2003): 1190-1196, at 1190.

2. Ad Hoc Committee of Deans, *Educating Doctors to Provide High Quality Medical Care: A Vision for Medical Education in the United States* (Washington, D.C.: Association of American Medical Colleges, 2004); H. R. Jamshidi and D. A. Cook, "Some Thoughts on Medical Education in the Twenty-First Century," *Medical Teacher* 25, no. 3 (2003): 229-238; Project Panel on the General Professional Education of the Physician and College Preparation for Medicine, "Physicians for the Twenty-First Century," *Journal of Medical Education* 59, no. 11 (1984): 1-31.
3. Liaison Committee on Medical Education, *Accreditation Standards*, available at <<http://www.lcme.org/standards.htm>> (last visited December 7, 2007).
4. C. Borger, S. Smith, C. Truffer, S. Keehan, A. Sisko, and J. Poisal, et al., "Health Spending Projections Through 2015: Changes on the Horizon," *Health Affairs* 25, no. 2 (2006): w61-w73, at w61.
5. A. D. Feld, "The Health Insurance Portability and Accountability Act (HIPAA): Its Broad Effect on Practice," *American Journal of Gastroenterology* 100, no. 7 (2005): 1440-1443; M. G. Bloche, "The Supreme Court and the Purposes of Medicine," *New England Journal of Medicine* 354 (2006): 993-995.
6. M.E. Whitcomb, "The General Professional Education of the Physician," *Academic Medicine* 81, no. 12 (2006): 1015-1016; E. J. Emanuel, "Changing Premed Requirements and the Medical Curriculum," *JAMA* 296, no. 9 (2006): 1128-1131.
7. M. E. Whitcomb and M. B. Anderson, "Transformation of Medical Students' Education: Work in Progress and Continuing Challenges," *Academic Medicine* 74, no. 10 (1999): 1076-1079.
8. L. I. Silverberg, "Survey of Medical Ethics in US Medical Schools: A Descriptive Study," *Journal of the American Osteopathic Association* 100, no. 6 (2000): 373-378; J. M. DuBois and J. Burkemper, "Ethics Education in U.S. Medical Schools: A Study of Syllabi," *Academic Medicine* 77, no. 5 (2002): 432-437; L. S. Lehmann, W. S. Kasoff, P. Koch, and D. D. Federman, "A Survey of Medical Ethics Education at U.S. and Canadian Medical Schools," *Academic Medicine* 79, no. 7 (2004): 682-689.
9. R. E. Eckles, E. M. Meslin, M. Gaffney, and P. R. Helft, "Medical Ethics Education: Where are We? Where Should We be Going? A Review," *Academic Medicine* 80, no. 12 (2005): 1143-1152.
10. See Silverberg, *supra* note 8.
11. See Eckles et al., *supra* note 9.
12. See Silverberg, *supra* note 8.
13. P. C. Williams and W. Winslade, "Educating Medical Students about Law and the Legal System," *Academic Medicine* 70, no. 9 (1995): 777-786.
14. R. S. Olick, "It's Ethical, but is it Legal? Teaching Ethics and Law in the Medical School Curriculum," *Anatomical Record* 265, no. 1 (2001): 5-9.
15. American Association of Medical Colleges, *Number of U.S. Medical Schools Teaching Selected Topics, 2004-05*, available at <[http://services.aamc.org/currdir/section2/04\\_05hottopic.pdf](http://services.aamc.org/currdir/section2/04_05hottopic.pdf)> (last visited February 2, 2007).
16. B. Barzansky and S. I. Etzel, "Medical Schools in the United States, 2005-2006," *JAMA* 296 (2006): 1147-1152.
17. See Barzansky and Etzel, *supra* note 1.
18. See Lehmann, *supra* note 8.
19. See American Association of Medical Colleges, *supra* note 15.
20. See Williams and Winslade, *supra* note 13.
21. See Olick, *supra* note 14.
22. See Silverberg, *supra* note 8.