

Humanities in Undergraduate Medical Education: A Literature Review

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Abstract

Purpose

Humanities form an integral part of undergraduate medical curricula at numerous medical schools all over the world, and medical journals publish a considerable quantity of articles in this field. The aim of this study was to determine the extent to which the literature on humanities in undergraduate medical education seeks to provide evidence of a long-term impact of this integration of humanities in undergraduate medical education.

Method

Medline was searched for publications concerning the humanities in undergraduate medical education appearing from January 2000 to

December 2008. All articles were manually sorted by the authors. Two hundred forty-five articles were included in the study. Following a qualitative analysis, the references included were categorized as "pleading the case," "course descriptions and evaluations," "seeking evidence of long-term impact," or "holding the horses."

Results

Two hundred twenty-four articles out of 245 either praised the (potential) effects of humanities on medical education or described existing or planned courses without offering substantial evidence of any long-term impact of these curricular activities on medical proficiency. Only 9 articles provided evidence of attempts to

document long-term impacts using diverse test tools, and 10 articles presented relatively reserved attitudes toward humanities in undergraduate medical education.

Conclusions

Evidence on the positive long-term impacts of integrating humanities into undergraduate medical education is sparse. This may pose a threat to the continued development of humanities-related activities in undergraduate medical education in the context of current demands for evidence to demonstrate educational effectiveness.

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Many medical schools throughout the world have integrated the study of the humanities in their undergraduate curricula through disciplines such as philosophy, ethics, literature, theater, and the arts. Concurrently, there is a strong tendency in medical education to insist that any learning activity should contribute to the students' development of concrete and measurable competencies, whether skills, knowledge, or attitudes. This tendency in medical education is in line with the general focus on outcomes-based education that has been advanced in medical education in the United States, Canada, and Europe¹

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and which in a European context is promoted through the comprehensive Bologna process.

As of now, few, if any, aspects of medical education are able to produce empirically based evidence of their indispensability in the course of the education of a physician. Furthermore, when it comes to the humanities in medical education, the quest for measurable learning outcomes may not always be easily compatible with the generally antireductionist approach in the humanities. Many articles claim that humanities may contribute significantly to the formation of humane and holistically oriented doctors, and although the humanities have gained ground in medical education, they are still "new kids on the block" when compared with, say, gross anatomy. In any context, newcomers usually have to prove their value or legitimacy to be accepted. Likewise, we presume that empirical evidence and/or other kinds of good arguments presented in support of the humanities' positive contribution to the education of future doctors validate the presence of the humanities in the curriculum. It is, however, very difficult to measure with any certainty to what extent the inclusion of humanities

in medical curricula makes better doctors. Are attempts to produce empirical evidence for any such effect even worth making? After all, the purpose of including the humanities in medical education really may not be to produce specific measurable outcomes.

It is outcomes-based education, though, that is currently on the agenda,¹ so a lack of empirical evidence may hinder the humanities in gaining and keeping a firm position in medical education. The purpose of this study was to perform a systematic literature review to investigate the extent to which the literature on humanities in medical education is concerned with evidence of the impact of this teaching. To fulfill this purpose, we constructed a meaningful typology of the publications we found. We distinguish between articles that predominantly (1) contain arguments in favor of the general relevance or necessity of integrating humanities in undergraduate medical education, (2) describe and/or evaluate specific medical humanities curricular activities, (3) report empirical findings that provide evidence for the impact of humanities in undergraduate medical education on future doctors' actual knowledge, behavior, and/or attitudes

toward patients in real-life doctoring, or (4) voice reservations or question expectations as to the outcome of integrating humanities studies in undergraduate medical education. The articles in the third category are few but interesting in their attempts to look beyond the curricular activities and their immediate reception among the students to any positive effect these activities might have on future doctors' knowledge, behavior, and/or attitudes toward patients in real-life doctoring.

Method

We searched Medline for all publications relating to the humanities in undergraduate medical education. Primary search terms were *Education*, *medical*, *undergraduate* or *Curriculum* in MAJR (main subject heading) combined (AND) with *Humanities* in MeSH (subject heading). All search terms were "exploded," meaning that any publication indexed with one of Medline's many subheadings under these terms would also be found. In that way, searching for publications indexed under *humanities* in MeSH also finds publications indexed under approximately 100 subheadings including, for instance, *art*, *ethics*, *history*, and *literature*. So as not to overlook humanities-related publications that might not have been indexed with the appropriate MeSH terms, we expanded the search to include articles with any of the words *anthropology*, *art*, *communication*, *creative writing*, *culture*, *drama*, *drawing*, *epistemology*, *ethics*, *history*, *humanities*, *literature*, *philosophy*, *poetry*, or *religion* in the title. Publications from nursing or dental journals were

excluded, as were any articles published before January 1, 2000. We checked reference lists of a random selection of the retrieved publications to identify any missing references and significant journals. A few additional references were found and added to the dataset. However, manually checking the references did not indicate any bias in the search strategy, such as the possible systematic omission of articles from specific journals. The search was first conducted in September 2007 and repeated in January 2009 to identify all publications from September 2007 to December 2008.

One thousand twenty publications met the search criteria. All publications were sorted manually following the inclusion and exclusion criteria indicated in Table 1. We deemed 775 articles irrelevant, the majority because they were not concerned with undergraduate medical education or because of their obvious irrelevance. Examples of the latter included a commentary on supervisors possibly neglecting to ensure that student projects are approved by relevant research committees,² an article on how college undergraduates studying to be human service professionals could help to bridge the gap between thanatology researchers and practitioners,³ and a piece on the value of experiential education in dietetics.⁴ Articles discussing ethical questions relating to medical education but not dealing with an ethics curriculum as such were also excluded,^{5,6} as were anecdotes or memoirs such as, for example, Edwards'⁷ account of a "humanistic role model." This left 245 articles for review.

We read all articles included for review, although in some cases only the abstract was read thoroughly. On the basis of our examination, all articles were labeled with tags indicating (1) the type of publication, (2) the sector of the major field of humanities treated, (3) any suggested benefit derived from the specified curriculum, and (4) the general tone, attitude, or message of the publication. The tags are described in greater detail in Table 2. All publications were coded with at least one term in each of the four categories.

We developed the codes through a continuing iterative process aimed at making them sufficiently detailed yet manageable as a set. As we developed and attributed the codes, we compiled a substantial set of "field notes" on particularly interesting or notable formulations or assumptions serving to facilitate further interpretation and the development of an adequate typology.

The typology presented below distinguishes between articles categorized as primarily

1. *Pleading the case*: Publications predominantly containing arguments in favor of the general relevance or necessity of integrating humanities in undergraduate medical education. Also, publications predominantly arguing how humanities should be taught in undergraduate medical education, relying on a fundamental approval of the humanities' *raison d'être* in medical education, or stating how impediments to the integration of the humanities should be overcome.
2. *Course descriptions and evaluations*: Publications predominantly centered

Table 1

Inclusion and Exclusion Criteria for Publications Reporting on the Humanities in Medical Education From a Literature Review of 245 Publications, 2009

Parameter	Inclusion criteria	Exclusion criteria
Curriculum	Publications presenting viewpoints, descriptions, evaluations, reports, etc., concerning planned, current, or completed humanities-related curricular activities in undergraduate medical education	Other subjects such as educational matters in general, admission, use of humanities for clinical/therapeutic purposes or as part of treatment
Humanities	Humanities in general, aesthetics, arts (drawing, sculpturing, visual), communication, creative writing, culture, discussion, drama/theatre, epistemology, ethics, film, gender studies, history, literature, music, narratives, religion, spirituality	Other fields such as social sciences, law, health economics
Undergraduate medical education	Medical education before graduation	Other curricula including nursing, dentistry, veterinary, postgraduate education
Published in this millennium	Indexed in MedLine January 2000–December 2008	N/A

Table 2

Descriptions of Tags Added in the Coding of Publications Reporting on the Humanities in Medical Education From a Literature Review of 245 Publications, 2009

Category	Description
Publication type	Anecdote; commentary; description; editorial; empirical; evaluation; letter; review; plan to follow up; proposal; theorizing/hypothesis; viewpoint
Main subject or concern	Aesthetics; anthropology; art of medicine; arts, visual arts, drawing, sculpture; communication; concepts of health and disease; creative writing; culture; discussion; drama/theater; evidence-based medicine; epistemology; ethics; film; gender studies; history; human rights; identity construction; information literacy/evidence-based medicine/critical appraisal; leadership; life story; literature; medical humanities in general; music; narratives, narrative structuring; religion, spirituality
Suggested outcome, if any	Promote academic skills, learning competencies, deep learning; acknowledge EBM; antidote (against reductionism and/or too much focus on biomedical perspectives); attitude; behavior; broaden horizons/open to new ideas; clinical skills; communication skills; cultural flexibility; decision-making and problem-solving; deep understanding; doctor-patient relationship; general level of education; empathy/compassion; having been exposed to humanities as a means in itself; promote humaneness, humanistic values, virtues, being a good doctor; interpersonal skills; knowledge; medical expert; miscellaneous or N/A; moral sensibility, development, courage; observation/interpretation skills; praise the role of the chaplain; professionalism; reflection; skills; socialization; tolerance; understanding patients/patient's perspective/empathy; well-being/personal development
Attitude	Negative, pessimistic; positive, optimistic; questioning, being critical; reflecting

around descriptions of specific curricular activities or series of activities. Descriptions may be accompanied by evaluations, whether in the form of typical student surveys, an instructor's estimation of the quality or success of the curricular activity in question, or some measurement of the immediate impact of the curricular activity in terms of students' (sometimes self-reported) gain in knowledge, skills, or attitude.

3. *Seeking evidence of long-term impacts:* Publications reporting empirical findings that provide evidence for the impact of humanities in undergraduate medical education on future doctors' actual knowledge, behavior, and/or attitudes toward patients in real-life doctoring.
4. *Holding the horses:* Publications not necessarily unfavorably disposed toward humanities studies in medical education, but pointing out difficulties, voicing reservations, or questioning expectations as to the outcome or impact of integrating humanities studies in undergraduate medical education.

On the basis of these classifications, articles reporting surveys of students'

and/or faculty's immediate responses to the activity in question, or reporting the results of before-and-after tests, were categorized as "course descriptions and evaluations." On the other hand, articles reporting attempts to measure whether the humanities activity led to any (possibly self-reported) long-term change in students' attitudes, behaviors, or knowledge were categorized as "seeking evidence of long-term impact." On the basis of this demarcation, Anandarajah and Mitchell's⁸ article on a spirituality and medicine elective, for instance, was categorized as being primarily descriptive and evaluative, despite the fact that this study offers data on how the course may have influenced students' knowledge on spirituality and medicine. However, Peters and colleagues'⁹ evaluation of the outcomes of a new curriculum on behaviors and attitudes related to humanistic medicine among young doctors was categorized as primarily seeking evidence of long-term impact.

Results

The articles analyzed in this study present a wide variety of curricular activities oriented toward the humanities in undergraduate medical education. Not surprisingly, reports on well-established

fields such as ethics and literature were numerous. In addition, we found many articles about humanities-based curricular activities, ranging from philosophy and epistemology to gender studies and anthropology to drama, film, history, and creative writing (for a comprehensive list, see Table 2).

Many publications account for the beneficial impact or effect that was supposedly induced by the curricular activity in question. However, more often than not, these "declarations of relevance" were presented in broad terms and were not supported by empirical evidence produced in a systematic manner. Jones and Carson¹⁰ state, for instance, that if humanities are integrated into medical curricula in the right way, students will eventually "become ethical, empathic, and educated physicians, the kind of doctor one would be proud to have for one's self and one's family" without any empirical studies supporting the view. Our reading of the articles strengthened the impression that at least some members of the medical education community seem to assume that simply increasing exposure to the humanities will contribute positively to medical students' personal and professional development in the broadest possible understanding and, thus, will eventually benefit both future doctors and their patients. Hence, humanities are perceived as a general means to achieve the goal of fostering the generic "good" (empathic, holistically oriented) doctor.

Some studies do, however, specify expectations regarding concrete, and hence more measurable, learning outcomes. Shapiro and colleagues'¹¹ investigation into whether the arts can be used to enhance medical students' development of "observational and pattern recognition skills" is a very good example of such a study. The goal in the curricular innovation described by Shapiro et al is clear: For good clinical practice (e.g., in diagnostics and in medical decision making), the doctor must be able to combine pieces of information and construct an overall pattern. Looking at and giving meaning to art is thus presumed by the authors to involve similar abilities. This gives rise to the idea presented by Shapiro et al that training medical students in seeing and interpreting art will strengthen their capabilities to observe and to recognize

patterns and will eventually strengthen their capability to diagnose and make the right decisions in clinical work.

Pleading the case

Sixty-eight of the 245 articles were categorized as “pleading the case” for the humanities in undergraduate medical education. These articles primarily propose or present hypotheses about why and how humanities should be integrated in medical education. Their origins may differ, but many of the articles in this category emphasize the potential for humanities curricula to rectify an existing problem in the health care environment. For example, Baum¹² begins, “there is a widely recognised hazard that an exaggerated emphasis on molecular reductionism may lead to the loss of the essential humanitarian instincts of young doctors,” and goes on to clarify that

the function of teaching arts and humanities to medical undergraduates is [...] to ensure that they make better and more humane physicians who would do everything within their power, even to the point of self-sacrifice, to save a life or to succour someone in mortal pain.

Other “pleading the case” articles begin by reporting the outcome of a specific medical humanities activity, thereby resembling the “course descriptions or evaluations” articles discussed below. However, in the “pleading the case” articles, the description is used as a springboard for posing a more universal hypothesis about the benefits of humanities education for students. As an example, DasGupta¹³ writes an essay based on her experiences with teaching a specific course on women’s illness narratives and uses the description to support recommendations for medical students in general. DasGupta claims, for example, that “medical students are [...] convinced and coerced by the medical establishment to abandon the needs of

their bodies in favor of their minds,” but “by writing about their own bodily experiences, an oftentimes fractionalized bodyself can be healed or in a sense unified by this same empathic process.”

Course descriptions and evaluations

One hundred fifty-six of the 245 articles in this study were categorized as “course descriptions and evaluations” (see Table 3). The course descriptions are in most cases accompanied by an explanation of the course’s *raison d’être* or expected outcome and some kind of evaluation data, in some instances including data on short-term, course-specific outcomes. The account of the course’s *raison d’être* may be either very detailed or it may be more generic or universal. Hampshire and Avery,¹⁴ for example, make the generic statement that studying medical scenes in literature “can enable [students] to reflect on their clinical experience and can provide a more profound understanding of the consequences of illness for the patient and their family.” In another example, Shafer et al¹⁵ go into some detail about what their literature-and-medicine course may mean to their students. They posit that the course may enable students to empathize with patients’ families and to be more aware of what they will encounter as physicians, but they also suggest a broader benefit—namely, that reading literature may help medical students “think more deeply about medicine in a variety of contexts.” The evaluation data offered in this type of article also fall within a very wide range. Some studies simply state that the learning activity was received well by students, while others go into detail about how students rated the course on a series of parameters. An illustration of the latter would include, for instance, Shapiro and Hunt’s¹⁶ account of how medical students evaluated the experience of attending theatrical

performances dealing with serious diseases. Shapiro and Hunt not only report that “feedback [...] was extremely positive” but offer detailed data on students’ assessments of whether attending the performances improved their understanding of the experiences of, for instance, people living with AIDS, whether the students thought they would be able to incorporate insights from the performances into future interactions with patients, and so on.

Seeking evidence of long-term impact

A third type of article is made up of reports seeking evidence for the impact of humanities in undergraduate medical education on future doctors’ actual knowledge, skills, behavior, and/or attitudes toward patients when it comes to real-life doctoring. This type of article includes any study that examines whether or not students or young doctors exposed to a humanities course exercise more empathy or act more ethically than do students who have not studied the humanities. These studies may also test whether trainees exposed to the humanities have a better understanding of, for instance, patients living with AIDS than they would have had they not participated in specific, humanities-related curricular activities. We found only 9 out of 245 articles belonging to this category. These articles evaluate the impact, both negative and positive, of integrating humanities in medical education. One example is Peters and colleagues’⁹ report on an evaluation of “the long-term effects of an innovative curriculum [...] on behaviors and attitudes related to humanistic medicine.” In this study, Peters et al compare two groups of Harvard graduates, one from a traditional and one from a more “humanities-oriented” curriculum (the humanities-oriented curriculum is referred to as “new pathway” or NP). Comparing graduates from these two groups, Peters et al conclude that “as practicing physicians, their attitudes and behaviours are similar.” However, they emphasize that “almost ten years after their graduation, we continue to observe significant differences between the NP graduates and their peers in the domain of humanistic medicine.” Here, Peters et al refer to test results showing that NP graduates were more prone to pursue careers in primary care or psychiatry, that they felt better prepared for practicing humanistic

Table 3

Distribution of Reviewed Articles According to the Suggested Typology From a Literature Review of 245 Publications Reporting on the Humanities in Medical Education

Category	Number of articles	References
Pleading the case	68	1, 12, 20, 171–235
Course descriptions and evaluations	156	8, 10, 11, 13–16, 22–170
Seeking evidence of long-term impact	9	9, 17, 236–242
Holding the horses	12	18, 19, 243–252

medicine, and that they were more confident in managing patients' psychosocial problems when compared with graduates from the traditional curriculum. Hence, the authors "believe that the evaluation makes a convincing case that a humanistic approach to medicine can be taught and learned."

Another example is DiLalla and colleagues¹⁷ study in which the authors claim that "exposure to educational activities in empathy, philosophical values and meaning, and wellness during medical school may increase empathy [...] in medical practice." DiLalla et al reach this conclusion based on the results of a survey that included assessment of the attitudes of a large group of medical personnel toward empathy, spirituality, and tolerance. These findings were compared with data on, among other things, the respondents' participation in sessions on empathy during their years in medical school.

We point to DiLalla and colleagues¹⁷ study as one of the relatively few examples of studies that purposely seek to investigate whether a possible impact of exposure to humanities during medical education is traceable in the medical practice of future doctors. It is not the purpose here to discuss the validity of the methodologies implied in these studies nor whether or not DiLalla and others produce convincing evidence of the causal connection between medical school empathy sessions on the one hand and empathic behavior among medical personnel on the other.

Holding the horses

Yet another category of articles is constituted by reports, letters, and commentaries conveying more muted attitudes toward the effect of humanities studies in medical education. We found 12 articles in this category. These articles represent a spectrum ranging from blunt skepticism to scientific reluctance about accepting any proposition not yet supported by adequate empirical data. An example of the skepticism would be Caan's¹⁸ letter in *BMJ*, in which he asks, "On what evidence can medical schools 'plant' ethical principles anew in students aged 20 and older?" He adds that, instead, students may actually be learning to conceal bad behaviors. An example of scientific reluctance would be Shapiro and colleagues¹⁹ account of a project

introducing medicine-related poetry and prose in a third-year medical curriculum. Shapiro, well known in the medical education community as a leading proponent of the use of literature and the humanities in medical education, dryly concludes that although the project "suggests some possibilities for introducing humanities into a family medicine clerkship," and although "some students may benefit from exposure to literature," it is also a fact that "a significant number of learners might not perceive much benefit from this kind of curriculum," and eventually "more research needs to investigate the relationship between exposure to literature and student behaviour in actual clinical settings."¹⁹ Shapiro and colleagues' point is not that this is necessarily a problem for the humanities in medical education; but still her article is one of relatively few examples of a study highlighting the need for further investigation into the actual effects of teaching the humanities in medical education.

A summary of the results

To sum up, 224 publications out of 245 either praised the potential effects of humanities studies in medical education or described actual or planned courses with some evidence for short-term impact of these curricular activities. Only 9 studies were found to demonstrate efforts to document long-term impacts on the clinical practice of medical doctors, and 12 articles were found to act as mouthpieces for critical attitudes toward humanities studies in undergraduate medical education or for concerns that the humanities project, although fundamentally sympathetic, may rely on insufficient foundations when it comes to documented effects or impact.

Discussion

Although the typology proposed above is neither exhaustive nor exclusive, we hope to have illustrated the meaningfulness of the categorization by providing a broad spectrum of examples and citations. Nevertheless, we present the categories themselves as our proposed discursive construction rather than as a mirror of some ontologically inherent essence present in the body of the references studied. Furthermore, we realize there is

an element of subjectivity to how each article was categorized. For instance, we categorize Shapiro and colleagues¹⁹ article on how "a spoonful of humanities makes the medicine go down" as a "hold the horses" article, although others might see this particular article as more of a "descriptive and evaluative" or a "seeking evidence of long-term impact" type. And, to add to these admitted uncertainties, using an alternative literature retrieval strategy could have given rise to a different data set, thereby somewhat altering the categories or at least their relative distribution.

However, we assume that these uncertainties do not seriously challenge the overall impression gained from our review of the literature. Clearly, the literature offers a substantial set of course descriptions, as well as reports of short-term impacts, student evaluations, and advocacies of humanities-related curricular activities in undergraduate medical education. More than 9 out of 10 publications reviewed had as their main purpose either to describe specific, humanities-oriented learning activities or to contribute to the discursive construction of humanities as a necessary component of medical education. Very few systematically investigated whether humanities in undergraduate medical education has an observable impact on the attitudes, competences, and practice of future doctors.

We wish to underscore that the lack of articles seeking evidence for long-term impact does not imply, directly or indirectly, that humanities studies do not have the effect claimed by many medical educationists. The apparent lack of empirical evidence can be explained in many perfectly reasonable ways. As Shapiro et al¹⁹ explain, conducting research into the effects of any curricular invention is complicated by a number of almost insurmountable methodological obstacles. It is difficult or maybe even impossible to demonstrate any proposed specific outcome of a learning activity because of the vast plurality of possible confounders.

Methodological difficulties aside, some might fundamentally object to the underlying assumption that evidence for the impact of humanities on undergraduate medical education is worth investigating. It could be

contended that any attempt to measure the “usefulness” of humanities in medical education would in effect illustrate a thoroughly defective view both of the humanities and of medical education. Cooper and Tauber,²⁰ for example, warn us that “the reductionist-positivist mode of medical education fails to equip physicians with the skills and attitudes to meet the full range of patients’ physical and emotional needs.” Therefore, a curricular change is needed, adding more emphasis on “values, ethics, and culture of caring.” Humanities, in other words, is intended to play the role as a safeguard or an antidote to a threatening reductionism. Following that line of argument, it would be a contraindication to insist on evidence-based medical education defined by a demand for proving the long-term impact of any given humanities-related curricular innovation. Further, the composition of all educational curricula takes place in a political and interpersonal milieu in which evidence of impact is only one of many influential factors.

Finally, a foreseeable reaction to our findings could be that the lack of evidence of the impact of humanities-related curricular activities in medical education is simply due to the fact that the implications of humanities-related curricular activities are not measurable, at least not using the assessment tools currently predominant in medical education, as argued by Kuper¹ in a review of articles reporting on evaluation tools for courses on literature and medicine.

But notwithstanding any arguments against evidence-based medicine and medical education, it is difficult to disregard the fact that outcomes-based education is currently on the agenda.¹ Our study calls attention to the importance of humanities in medicine. Yet, at the same time, it may pose a threat to humanities in medical education if the medical humanities community does not attempt to deliver some kind of substantial evidence of the advantages of integrating humanities in medical education. Reflections over the nature and relevance of humanities in medical education are readily available in the literature and are of indisputable value for the formation and refinement of these endeavors. Likewise, articles with course descriptions and evaluations are inspiring

and of substantial value for anyone within the field of humanities in medical education.

However, to defend, maintain, or possibly strengthen the status of humanities in medical education, we anticipate that it is necessary to provide more empirical evidence that these learning activities do, in fact, deliver positive, and if not measurable then at the least noticeable, outcomes. The ultimate question is whether it can be documented that students who are exposed to the humanities eventually become better doctors to the benefit of themselves, their practice, and their patients.

There is a significant and important challenge in developing creative methods for the production of this kind of evidence, including maybe new ways of addressing humanistic competencies and competence as a whole.²¹ Humanities studies in medical education may flounder if the medical humanities community cannot overcome the difficult (and, to some, perhaps even un savory) task of providing evidence that humanities in medical education actually contributes to making better doctors for the future.

Conclusions

The results of this literature review revealed that the literature on humanities studies in undergraduate education is dominated by descriptions and evaluations of existing or planned learning activities or by arguments in favor of humanities in medical education. We also noted that there is a shortage of studies reporting evidence of the long-term impact of humanities in undergraduate medical education on the development of medical proficiency. The review offers a typology useful for the discussion of the character and current status of the literature in the field. This categorization reveals that there are numerous interesting and inspiring descriptions of humanities-related curricular innovations in undergraduate medical education. There is, however, a shortage of studies delivering evidence for the impact of these curricular initiatives for doctors and their work with patients. Likewise, there are few articles with a critical stance to the seemingly widely accepted notion

that humanities are in some generic way beneficial to future doctors. We suggest that the lack of evidence for relevance to the work of doctors could pose a threat to the continued development of humanities-related activities in undergraduate medical education. The present trend of evidence-based learning, after all, requires that the study of the humanities, like any other curricular activity within medical education, should in principle be able to justify its existence with evidence of its effectiveness.

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Which Medical Schools Produce Rural Physicians? A 15-Year Update: Correction

In the article by Chen et al in the April issue, 1 there was an error in Table 3. The name of the first medical school listed in the table was incorrect. The corrected table is shown below.

Table 3
MD- and DO-granting Medical Schools with the Highest Percentages of Graduates (1988 to 1997) Practicing in Rural Areas in 2005

Medical school	MD/DO	% graduates practicing in rural areas, 2005
West Virginia School of Osteopathic Medicine	DO	41
University of Minnesota-Duluth	MD	36
University of Mississippi	MD	32
University of South Dakota	MD	31
Mercer University	MD	31
Oklahoma State University	DO	30
University of North Dakota	MD	28
A.T. Still University-Kirksville	DO	27
East Carolina University	MD	26
University of Kentucky	MD	25
University of Nebraska	MD	23
East Tennessee State University	MD	23
Kansas City University of Medicine and Biosciences	DO	21
University of Arkansas	MD	21
Ohio University	DO	21
University of New England	DO	20

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