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## Recommendations for a new curriculum in pain medicine for medical students: Towards a career distinguished by competence and compassion

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### Abstract

The education of physicians is a fundamental obligation within medicine that must remain closely aligned with clinical care. And although medical education in pain care is essential, the current state of medical education does not meet the needs of physicians, patients or society. To address this, we convened a committee of pain-specialist medical student educators. Tasked with creating systematically developed and valid recommendations for clinical education, we conducted a survey of pain medicine leadership within the American Academy of Pain Medicine (AAPM). The survey was conducted in two waves. We asked AAPM board members to rate 194 previously published pain medicine learning objectives for medical students, (79%) of those eligible for

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participation responded. The ‘Top 5’ list included awareness of acute and chronic pain; skillfulness in clinical appraisal; promotion of compassionate practices; displaying empathy towards the patient; and knowledge of terms and definitions for substance abuse. The ‘Top 10’ list included the major pharmacological classes as well as skills in examination, communication, prescribing, and interviewing. The top 20 list included pain care of cognitively impaired populations, those with co-morbid illness, and older adults. With the survey results in consideration, the committee produced a new recommended topic list for curricula in pain medicine. We strongly recommend that adequate resources are devoted to fully integrated medical curricula in pain so that students will learn not only the necessary clinical knowledge but also be prepared to address the professional, personal, and ethical challenges that arise in caring for those with pain. We conclude that improved medical education in pain is essential to prepare providers who manifest both competence and compassion towards their patients.

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## Introduction

The education of physicians is a fundamental obligation of the practice of medicine and should always remain closely aligned to the goals of excellence in clinical care. And although medical education is now recognized by the Institute of Medicine as a key element in addressing the pain treatment crisis in America, the current state of medical education is insufficient to address the needs of physicians, patients and society. A recent study indicated that medical students receive less than 10 hours of education about pain on the average [3]. This includes all coverage of pain neurobiology, pain pharmacology and major pain-associated conditions such as back pain, headache and visceral pain. This is woefully insufficient compared to the needs and stands in stark contrast to a recent study which reported that Canadian veterinary schools deliver over 80 hours of content about pain[4].

Given the prevalence of pain in clinical practice and the challenges associated with correctly diagnosing pain-associated illness and developing safe and effective treatment plans for pain, more education is necessary but there is limited consensus regarding the details of what should be taught. Analgesics are the most widely prescribed medications, and non-prescription pain relievers represent the largest segment of the over-the-counter market. One recent study found that on average, medical students in the U.S. receive less than one hour of education in medical school on analgesics in total [3]. For medical students to enter practice armed with a slim knowledge of these medications: usages, side effects and interactions; is a dangerous and unsustainable state of affairs [5]. Efficient, effective and widely accepted methods of preparing physicians to practice pain medicine relevant to general clinical care are needed.

Based on our experience as clinicians and educators, it appears that there are multiple systemic barriers that interfere with the advancement of pain education in medical schools. These include a lack of support for the development of medical education resources, limited representation of pain medicine physicians in curriculum planning committees, the widely-held view that pain medicine is not an essential element of medical education and care but is rather the domain of sub-specialty training, and the numerous pressures on medical school schedules. When a pain-expert physician does, by chance or dint of hard work, gain the

opportunity to educate medical students about pain, there is little relevant guidance available and existing solutions are piecemeal or significantly biased. Given the prevalence and problems of pain in clinical practice, it is imperative that medical education more adequately address the assessment, diagnosis and treatment of pain [2].

As a group, we share the experience that there are no clinically-focused curricula in pain designed for medical students. The one widely-referenced curriculum places a heavy emphasis on pain basic science and would essentially necessitate a mini-course in pain basic science [6]. This presents an unrealistic expectation as most medical schools have basic science curricula that are already heavily overburdened by the explosion of biomedical knowledge in the last half-century. At this same time, students are being asked to prepare for practice in environments that are increasingly complex in terms of clinical demands, procedural methodologies, regulatory requirements, socioeconomic factors and cultural expectations, all placing added pressure on medical schools to expand education in the clinical portions of the curriculum even as basic science knowledge is growing exponentially [7].

## Methods

To confront these challenges, we convened a committee of medical student educators, the AAPM Medical Student Education Sub-committee. Immediately it was apparent to most of us that students especially value education that is clinically-oriented and pragmatic in nature. In teaching at the bedside and in the clinic, we find that it is often possible to convey the essential points about pain basic science most memorably in the context of clinical experiences. In order to distill these experiences into systematically developed and valid recommendations for clinical education [8], we elected to conduct a survey of pain medicine leadership within our organization, the Board of Directors of the American Academy of Pain Medicine. The AAPM is an organization open to all physicians interested in pain medicine. The membership of the organization is exceptionally diverse and represents a wide range of specialists and general practitioners with a commitment to excellence in pain care. A survey of the AAPM board members was conducted in two waves at consecutive mid-year board meetings in 2010 and 2011. The members of the AAPM board are pain physicians who practice and teach in a wide variety of settings ranging from academic medicine environments to clinical practices, all are physicians who routinely come into contact with medical students for the purposes of teaching about pain. The board members were given a seven page paper document consisting of 194 previously published pain medicine learning objectives for medical students, grouped by topics [3]. Using a 5-point Likert scale rating approach with anchors of strongly disagree, disagree, neutral, agree, strongly agree; participants were asked to evaluate the learning objectives in response to the stem: "This objective is critically important for medical students to attain by graduation". The survey anchors were assigned numerical values ranging from 0 for strongly disagree to 4 for strong agree, and an average rating for each learning objective was calculated using a standard spreadsheet program, and the average rating for a topic consisted of the average rating of all learning objectives within a topic area. Learning objectives and topics were sorted by average rating and highest ranking learning objectives and topics are presented in tables 1 and 2 respectively. The Medical Student Education Sub-committee reconvened to discuss the

results of the survey and identify gaps in the ‘highest ranking topic list’ that formed the basis of the committee’s recommendation, Table 3. The recommendation was submitted to the Board of Directors for review and approval prior to submission for publication.

## Results

In all, 15 of 19 (79%) board members eligible for participation responded. The results were dramatic and surprising: The most important learning objectives, in terms of highest ratings received the highest rating from nearly all the raters, represent the highest ideals of pain medicine, and are entirely clinically focused. These are shown in Table 1. It is exceptional that out of 8 pages of learning objectives, the most clear and unqualified messages about pain were identified as essential, most especially the value placed on clinical appraisal, compassion, and empathy. We are impressed by this result and would strongly endorse the notion that medical students education about pain needs to be re-oriented towards these messages.

From the survey results, we further extracted the 20 top-rated topics in pain medicine. The ‘Top 20’ list actually contains a total of 28 items, as there were a number of topics tied for the same rating. This list includes the major pharmacological classes of treatment: opioids, neuromodulating drugs (anti-depressants, etc), and NSAIDs (here labeled COX inhibitors) but interestingly the list does not contain basic science topics of pain anatomy and physiology, or pain neurochemistry, except as included in a condensed coverage of pain essentials labeled ‘core knowledge’. The list of top 20 topics is strongly clinically-oriented and includes: examination skills, communication skills, prescribing skills and interviewing skills, all in the top 10. Surprises in the top 20 list include the relatively high rating assigned to pain care of cognitively impaired populations, those with co-morbid illness and older adults. This probably reflects the importance of these topics but may also reflect the prevalence of these challenges in pain-focused clinical practice: certainly as the population continues to age, the placement of these topics in a Top 20 list will seem remarkably prescient. In reviewing these results, broad topics that the medical student education sub-committee would also include in a Top 20 list are pediatric pain, oncologic pain, and headache. The absence of these topics from this list generated by our survey participants may reflect the fact that many of the patients falling into these categories aren’t as commonly referred to pain physicians, it does not diminish the importance of these topics in a general medical education plan addressing pain. Taking the survey results into consideration with the perspectives of the members of the medical student education sub-committee, we generated a recommended topic list for a new, clinically-oriented curriculum in pain medicine. These topics are shown in Table 3.

Included as supplemental data are tables outlining the learning objectives as ranked by the panel, these are divided into top-ranking learning objectives, intermediate-ranking learning objectives and lower-ranking learning objectives. It is important to emphasize that lower ranking learning objectives are not less important in the scope of clinical practice but many of these were commented upon by the expert group as more appropriate to advanced levels of training, e.g. residents and practicing physicians.

## Discussion

It is our vision that this systematically-derived and clinically-oriented topic list will lead the development of new, more powerful pain curricula, and will provide guidance to institutions seeking to assess the state of pain education and establish teaching standards in pain [9]. In developing specific curricula based on these topics, many considerations will need to be weighed including: availability of pain-expertise, local practice parameters and cultural considerations, the presence or absence of supporting material in the existing curriculum and perhaps most importantly, the enthusiasm for innovative or forward-thinking teaching methodologies [10]. In building a curriculum it is important to consider that integrated pain courses in which students are exposed to pain as a topic under direct course administration by the pain specialists allow for a more comprehensive view of pain medicine and greater depth of engagement between student and teacher. Obviously, in developing a curriculum, these recommended topics should be linked to specific learning objectives by each institution, we provide a sample in the supplemental data to this report.

The committee further resolved that medical education in pain is an ideal area for curriculum development. Pain, besides being widely prevalent and inadequately addressed, is a topic that integrates so much of what preclinical students are learning: neuroscience, pharmacology, physiology, medical ethics, and clinical skills all come together in a way that is deeply challenging and can ultimately be very satisfying in clinical practice. It is the recommendation of the committee that to the extent possible medical schools should adopt integrated, required pain courses that includes faculty from multiple allied health professions and incorporates the expertise of physicians from multiple disciplines within medicine. By integrated, it is meant that the curriculum will bring together the relevant topics in medicine in an intentional fashion, so that, for example, physiology is taught together with relevant clinical skills and pharmacology is taught together with medical ethics. It is essential, when developing an educational program, that learning is guided by specified objectives. Programs must engage in a critical review of learning materials to ensure the alignment of goals and specific learning objectives [8]. One surprising finding of the survey was the resounding endorsement of compassion and empathy as an integral part of pain medicine. The learning objectives: ‘Demonstrate knowledge of and promote compassionate care practices’; and ‘Display empathetic responses to patients with pain as a primary complaint’ were assigned the highest average rating, along with three other objectives, out of 194 objectives in total. Although there are those who have argued that compassion has no place in medicine [11], the rational and moral basis for including compassion and empathy is far stronger [12-14]. The distinction between empathy, often defined as the ‘vicarious experience of the thoughts, feelings, or actions of another’ and compassion, often defined as ‘the awareness of the suffering of another coupled with the desire to relieve that suffering’ primarily relates to the responsiveness that is intrinsic to compassion. This distinction is potentially very important, but remains unexplored within the context of clinical outcomes related to physician-patient encounters [14]. There is now a body of evidence that empathy is a quality which enhances the effectiveness of physicians in the setting of chronic diseases [15,16]. Unfortunately, the role of compassion in medicine, although widely acknowledged in classical literature and art [17], has not been the subject of research relating to improved clinical outcomes. In the

absence of substantive evidence, it is not infrequently asserted that compassion is unhealthy for physicians, interfering with clinical decision making and contributing to burn out [11]. Nonetheless, this is a potentially fallacious argument, laden with cultural biases, and the question merits additional research. To date, studies of other allied health professions suggest that compassion may actually be a source of satisfaction for providers [18] and empathy, when correctly employed, may be energizing [19].

Taking the evidence together, the committee strongly recommends that adequate resources are devoted to the development of fully integrated medical curricula to address pain so that students will be provided not only with the necessary clinical knowledge but also prepared to address the serious professional, personal, and ethical challenges that arise in caring for those with pain [12,13,20,21]. At this stage relatively little is known about how to best foster the development of compassionate and empathetic practices, this was a clear need identified in our survey and further study is warranted.

In conclusion, the impact of pain in clinical care is profound and an integrated effort is required to prepare medical students to manage pain. Much more needs to be done: through funding, standard setting, advocacy, organization, and innovation [2]. It is our intent, through the publication of this survey and associated recommendations to recalibrate the vision of an ideal medical education in pain and to spur new thinking about how we educate medical practitioners about pain. We urge stakeholders to provide stronger and more relevant support and to foster the building of educational resources that are reliable and free of commercial bias. Fully integrated medical education in pain is essential to prepare providers who manifest both competence and compassion towards their patients.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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**Table 1**

'Top 5', Highest rated learning objectives in pain medicine

Be able to distinguish between acute and chronic pain
Know of the importance of an exam and diagnostic testing to obtain an accurate diagnosis
Know the definitions of addiction, tolerance, substance abuse and dependence
Demonstrate knowledge of and promote compassionate care practices
Display empathetic responses to patients with pain as a primary complaint

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**Table 2**

Top-rated topics in pain, in order of rating on a scale of 0 to 4

1. Compassionate care and empathy	3.93
2. Examination skills	3.82
2. Communication	3.82
3. Prescribing skills	3.79
4. Opioids	3.76
5. Core knowledge: fundamentals of pain neurobiology, non-pharm treatments	3.74
6. Interview skills	3.69
7. Cognitively impaired populations	3.67
8. Clinical skills	3.64
9. Neuromodulating agents	3.63
10. Spine pain	3.61
10. Clinical reasoning	3.61
10. Behavioral perspectives on pain	3.61
11. Co-morbid illness	3.58
12. Epidemiology, public health and multicultural perspectives	3.55
12. Drug Addiction	3.55
13. Musculoskeletal pain	3.52
13. Counseling pain patients	3.52
14. Team communication	3.51
15. Pain emergencies	3.50
16. Assessment decisions and treatment decisions	3.46
17. Approach to the patient with pain	3.45
18. COX inhibitors	3.44
19. Neuropathic pain	3.43
19. Visceral pain	3.43
19. Pain terminology and pain assessment	3.43
19. Pain in older adults	3.43
20. Acute and surgical pain	3.40

**Table 3**

## Recommended Topics in Pain Medicine, Committee Consensus

1. Compassionate care and empathy
2. Examination and interview skills
3. Communication skills including team communication
4. Prescribing skills
5. Clinical reasoning: Assessment decisions and treatment decisions
6. Counseling pain patients: Approach to the patient with pain
7. Opioids
8. Neuromodulating agents
9. COX inhibitors/NSAIDs
10. Fundamentals of non-pharmacological treatments
11. Epidemiology, public health and multicultural perspectives
12. Fundamentals of pain neurobiology
13. Behavioral perspectives on pain
14. Pain terminology and pain assessment
15. Drug Addiction and pain
16. Spine pain
17. Musculoskeletal pain
18. Pain emergencies
19. Acute and surgical pain
20. Headache
21. Neuropathic pain
22. Visceral pain
23. Oncologic pain
24. Pain in older adults
25. Pediatric pain
26. Cognitively impaired populations
27. Pain and Co-morbid illness

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