

THE ORTHOPAEDIC FORUM



Musculoskeletal Medicine Educational Reform in the Bone and Joint Decade*

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The burden of musculoskeletal disease is vast. Although these diseases may lack the cachet of more immediately life-threatening conditions (such as cancer or stroke), musculoskeletal problems are worthy of increased attention, as the amelioration of bone and joint disease can certainly enhance life, if not extend it.

Buoyed by the accomplishments of the Decade of the Brain (1990-2000), the international community of musculoskeletal physicians and scientists came together in Sweden in 1998 to found the Bone and Joint Decade^{1,2}. The specific purpose of this group was to confront the growing burden of musculoskeletal disorders through raising public awareness of the problem and improving prevention, treatment, and research.

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The United Nations, the World Health Organization, and others announced public support. In the United States, President Bush, joined by the governors of all fifty states, declared the years 2002 through 2011 to be the National Bone and Joint Decade in the United States.

The international organization for the Bone and Joint Decade as well as its American counterpart have worked on many fronts, among them achieving recognition for the burden of musculoskeletal disease within the World Health Organization, successfully advocating for public health policy innovations, raising public awareness, and nurturing young clinical investigators in musculoskeletal basic and clinical sciences. One area of particular focus within the United States Bone and Joint Decade is the improvement of medical school education in musculoskeletal medicine.

As co-chairs of the medical school education committee (J.B. and G.V.L.) and executive director (T.K.) of the De-

cade, we welcome the chance now, at the Decade's five-year mark, to share a description of the problems and challenges we face, a detailing of the progress we have made, and a delineation of the future work to be done.

The Decade proposes that the medical school experience in musculoskeletal medicine is in particular need of scrutiny and rehabilitation. Although every organ system has its champions and specialty educators in every field can plead justifiably for curricular reform within their domains, the case for musculoskeletal medicine is particularly strong. We contend that musculoskeletal medicine is not taught adequately in American medical schools, and predictable consequences are seen: students lack both cognitive mastery and clinical confidence.

This public identification of the problems in musculoskeletal medicine education is offered not as screech but as a call to action. We invite all who can to join this important effort.

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Problems

Although musculoskeletal problems are common, the allocation of teaching time in medical school devoted to these conditions is far from commensurate with the burden of disease. Granted, prevalence should not be the sole determinant of curricular content: a curriculum dominated by the study of back pain, the common cold, and bowel irregularities would be clearly improper. Nevertheless, common important conditions cannot and should not be ignored.

The burden of musculoskeletal disease is undeniably large. According to data compiled by the Decade³, musculoskeletal conditions rank first among diseases in the United States with use of measures of disability, visits to physicians' offices, and impairment. Even omitting the all-too-common symptoms of degenerative joint disease (found in one of three adults), musculoskeletal impairments are reported by one of every seven Americans. Spinal impairments account for approximately one-half of the restricted-activity days at work, and approximately 2% of the United States population is either chronically or temporarily disabled because of back pain. Osteoporosis affects ten million Americans, leading to more than one million fractures; indeed, a majority of American women are expected to experience an osteoporosis-related fracture in their lifetime. And this short discussion omits fractures, deformities, tumors, and other musculoskeletal conditions, which of course inflict yet additional costs and misery.

In contrast to the vast amount of musculoskeletal medicine seen in practice, scant time is devoted to this topic in medical schools. Pinney and Regan⁴ determined that the fractional share of the total medical curriculum dedicated to musculoskeletal education in Canadian medical schools was <3%, yielding a "marked discrepancy" between what doctors needed to know and what they were taught. DiCaprio et al.⁵ examined curricula at American medical schools to ascertain whether each school offered a distinct course in mus-

culoskeletal medicine in the preclinical curriculum and whether so-called "musculoskeletal clerkships" (i.e., orthopaedics, rheumatology, or physiatry) were required. They found only fifty-one (42%) of 122 schools offered a designated preclinical module focused on musculoskeletal medicine and only twenty-five (21%) required a musculoskeletal clerkship. Fifty-seven schools (nearly half of the total) had no required instruction in musculoskeletal medicine whatsoever.

This curricular vacuum has led to an inevitable lack of cognitive mastery and clinical confidence, as has been shown in a variety of studies. Freedman and Bernstein^{6,7} reported on the administration of an examination to test basic competency in musculoskeletal medicine. Chairs of orthopaedic surgery departments and directors of internal medicine residency programs around the country were asked to verify the importance of the individual questions (nearly all of which were found to be important) and to set a passing score (it was approximately 70% in both groups). When the examination was administered to a group of eighty-five recent medical school graduates and the results were evaluated with use of the passing criterion set by the department chairmen, three-quarters of the examinees failed.

Matzkin et al.⁸ administered this same examination to medical students, residents, and staff physicians in multiple disciplines of medicine. Those who had taken a required or elective course in musculoskeletal medicine scored an average of 19 points higher than those who had not, prompting the authors to conclude that increased education in musculoskeletal medicine "would improve the general level of musculoskeletal knowledge." Lynch et al.⁹, evaluating musculoskeletal knowledge among family practice, internal medicine, and pediatric faculty, also found that higher examination scores were associated with prior participation in a musculoskeletal course. This association was likewise confirmed by Schmale¹⁰.

A lack of demonstrable cognitive mastery inevitably translates to a lack of confidence. (We should be grateful that, in the words of the Persian aphorism, those who know not, know that they know not—far worse would be ignorant doctors ignorant of their ignorance.) Clawson et al.¹¹ surveyed more than 5000 graduating primary care residents and found that the respondents felt poorly or very poorly prepared in musculoskeletal subjects. Matheny et al.¹² studied the confidence expressed by a sample of 351 graduating family practice residents regarding their perceived ability to perform a musculoskeletal physical examination, evaluate radiographs, and manage a variety of musculoskeletal conditions. They reported that residents showed relatively low confidence in the management of musculoskeletal problems and that greater clinical exposure during residency increased their confidence. Lynch et al.⁹ also assessed self-perceived confidence in musculoskeletal medicine in their study and found that their examinees expressed far greater confidence with general medical problems than with musculoskeletal problems. Perhaps predictably, those with prior participation in musculoskeletal courses demonstrated greater levels of confidence in musculoskeletal medicine.

Progress

The first step toward resolution must be an acknowledgment of the problem and a commitment to solving it. That first step was taken by the American Medical Association in 2003 when the House of Delegates passed Resolution 310, whose text is shown in Figure 1.

The deans of every American medical school have also publicly recognized the importance of musculoskeletal diseases and have sent signed declarations of their support to the United States Bone and Joint Decade. These declarations assert each school's commitment to advancing education, research, and patient care for bone and joint diseases.

The Association of American Medical Colleges (AAMC) established a

musculoskeletal panel within its Medical School Objectives Project. The goal of the Objectives Project is to “reach general consensus within the medical education community on the skills, attitudes, and knowledge that graduating medical students should possess.”¹³ In 2005, this panel, chaired by Dr. Dennis Boulware, a rheumatologist and dean at the University of Alabama, issued a report¹⁴ entitled “Contemporary Issues in Medicine: Musculoskeletal Medicine Education,” setting forth the skills, attitudes, and knowledge in musculoskeletal medicine whose mastery should be a requirement for the MD degree.

Last, the National Board of Medical Examiners (NBME) is developing a subject examination in musculoskeletal medicine. This examination is undergoing its final validation and is anticipated for general release in the 2007 to 2008 academic year. Because in the minds of many, testing drives

teaching—i.e., schools tailor the content of instruction according to the content of standardized examinations—the Decade has committed financial support to make this examination free to schools and students for the next two years. It is hoped that having a subject examination will not only make it easier for schools to develop and offer courses in musculoskeletal medicine but also that the imprimatur of the NBME will accord to musculoskeletal medicine greater perceived importance in the eyes of medical school administrators.

Future Work

The Decade recognizes that musculoskeletal medicine is a vast subject, spanning not only diseases that involve the bones, muscles, and joints directly but also topics in endocrinology and metabolism, hematology and oncology, nephrology, neurology, and many others. Indeed, musculoskeletal medicine

overlaps with nearly every area of study and practice. This broad definition of the scope of musculoskeletal medicine defines those who are charged to help with this reform effort: medical school faculty from nearly every department. Curricular reform in musculoskeletal medicine is not a venture to be championed by departments of orthopaedic surgery, rheumatology, or psychiatry alone; it is for all. As such, the Decade has proposed that stakeholder organizations unite to found a Council of Musculoskeletal Educators. This group will serve as a professional home for teachers of musculoskeletal medicine—to offer collegial support, to collect and share teaching materials, to conduct research, and to speak for the profession. To plan this council, a meeting was held in Chicago on June 23, 2007; seventeen stakeholder organizations sent representatives and still others will be recruited to this effort.

The Decade anticipates that this Council can lobby for curricular reform more effectively than isolated groups or individuals. In abstract terms, this reform comprises more effective teaching, greater exposure to and retention of the material, better application of information, and better synthesis of the subject matter. In concrete terms, it means no less than full implementation of the AAMC Objectives Project’s recommendations.

Unlike the international Decade, the United States Bone and Joint Decade is not promoting a single prescribed curriculum, recognizing that the community of medical schools in the United States represents more than 100 discrete cultures and that each school has a unique mission, a distinctive history, particular strengths, and specific weaknesses. Thus, the Decade has favored simply the establishment of a requirement for dedicated instruction in musculoskeletal medicine at 100% of the medical schools (hence the name of the Decade’s curricular reform effort: Project 100). While leaving the specific format and methods of delivery to the discretion of individual schools, this curricular commitment will ensure

Text of AMA Resolution 310:

RESOLVED,

That our American Medical Association strongly urge our medical schools to formally reevaluate the musculoskeletal curriculum; and be it further

RESOLVED,

That our AMA strongly urge our medical schools to make changes that ensure medical school students have the appropriate education and training in musculoskeletal care, and make competence in basic musculoskeletal principles a graduation requirement for medical school; and be it further

RESOLVED,

That our AMA encourage its representatives to the Liaison Committee on Medical Education, the Accreditation Council for Graduate Medical Education, and the various Residency Review Committees to promote higher standards in basic competence in musculoskeletal care in accreditation standards.

Fig. 1

Text of American Medical Association (AMA) Resolution 310.

that the necessary skills, attitudes, and knowledge in musculoskeletal medicine are taught somewhere in the four years.

Because musculoskeletal medicine is a large and increasingly complex field, it may be difficult for individual teachers to possess sufficiently broad expertise to direct a complete medical school course in this subject. Through the proposed Council of Musculoskeletal Educators, the Decade envisions developing and offering "Teach the Teacher" courses for instructors of musculoskeletal medicine. Such courses will help members of our profession to partner with one another, bringing together those with common interests who have thus far not crossed paths professionally.

Final Words

Although its name implies that the Decade will face apoptosis in five years, its work must endure. Thus, it seeks a legacy in those who survive it: the teachers of musculoskeletal medicine today and the students who will add to that knowledge and become teachers themselves in the future. But the work of the Decade is about more than just legacy

for our profession. The Decade hopes to witness a reformation of medical school education in musculoskeletal medicine not for its own sake but to mitigate the burden of musculoskeletal diseases and, ultimately, improve the lives of patients.

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