Report VII
Contemporary Issues in Medicine:
Musculoskeletal Medicine Education

Medical School Objectives Project

September 2005
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When Rheumatoid Arthritis Entered My Life: A Personal Narrative

It has been 12 years since being diagnosed with rheumatoid arthritis. I was 29, with three young children ages 9, 12, and 14, working full time as a dietician and going to nursing school. The swelling in my hands wouldn't go away. I lost weight, my body was always sore, and I was always tired. I was in denial and didn’t understand what was happening to me. I felt depressed, but knew I had to keep going every time I looked at my kids.

I was exhausted but I kept a smile on. My kids were preteens. It was impossible for me even to take them to the mall because I was too weak and tired. I called family or neighbors and asked them to drive my car so my kids could go to activities.

I kept secrets. I withdrew from nursing school and changed my phone number. I didn’t want my friends to see my condition. I didn’t date. I thought, “Who would possibly want to date me?” I was ashamed of how I looked—my hands, and scars from surgeries. I wore long-sleeved shirts so the scar from my elbow replacement wouldn’t show.

I was in financial turmoil because I had to stop work. And I couldn’t afford my medicines. I was told to bring in receipts so that I could apply for spin down. I just couldn’t—my body was always sore and I was always tired. Eventually I entered some drug studies, received medications through the studies, and improved.

I had always loved to work out but I gave up going to the gym. Even now I miss running and speed walking with friends.

As my daughters matured, they took control of the house, the shopping, and the banking. My older daughter who volunteered at a local children’s hospital saw a child with rheumatoid arthritis. She was scared. Was it hereditary and would she get it?

I really needed a job. I tried to find one I could handle but found myself turning down offers saying, “I’m sorry. I really don’t think I can do that job.” Or being turned down because I was overqualified. Two years after my diagnosis and after reconstructive surgery on my left foot, I returned to work—this time in airport security. My feet hurt—the only comfortable shoes were clogs. The job required black boots or shoes. I explained about my rheumatoid arthritis and was transferred to an office position.

My friends found out about my rheumatoid arthritis. They piled in and out of the house and refused to stay away. “You need us,” they told me.

My kids are interested in health-related fields. I’m sure the life we have led has been a factor. My older daughter is a paramedic. My middle daughter is in college completing pre-med requirements.

Eventually I returned to nursing school. I knew it was something I really wanted to do. I did finish my program and received my R.N. degree. I just wanted to have that degree—to have it on my wall and to know that I accomplished something. It was in my soul.

—Anonymous
Contemporary Issues in Medicine: Musculoskeletal Medicine Education

Studies conducted during the past decade have shown convincingly that people in the United States are living longer with each passing decade and remain healthier and more active as they age. With longevity, the prevalence of musculoskeletal conditions in the population is increasing and will continue to increase over time. An increase in the prevalence of musculoskeletal conditions will have a profound impact on society. A growing number of individuals will be afflicted with chronic pain, experiencing a decrease in the quality of their lives. The cost of treatment and the inability to remain employed full time will have a significant financial impact as well.

It appears that practicing physicians do not appreciate fully the importance of common musculoskeletal conditions. As a result, patients who are afflicted with one of those conditions often receive inadequate treatment. Although graduate medical education programs are primarily responsible for preparing doctors to care for those patients with a musculoskeletal condition, it is important that medical schools provide learning experiences that will allow students to gain an appreciation of the importance of these conditions and the challenges inherent in caring for those patients. Medical schools may not be accomplishing this educational goal since the attention paid to the conditions in the usual medical school curriculum is not commensurate with the prevalence of these conditions. There are many reasons why this situation exists. But of particular note is the clinical education of medical students, which continues to be based largely in the inpatient units of hospitals. As a result, students do not encounter enough patients with these conditions to gain an appreciation of the impact that the conditions have on individuals and the society at large.

To assist medical schools in their efforts to improve how their students are being educated about musculoskeletal conditions, the Association of American Medical Colleges (AAMC) charged a panel of musculoskeletal experts to develop learning objectives on musculoskeletal conditions for the undergraduate medical education program and to suggest ways in which appropriate learning experiences might be integrated into an existing curriculum. This report, issued as a part of the AAMC’s ongoing Medical School Objectives Project, summarizes the panel’s views on the knowledge, skills, and attitudes relevant to musculoskeletal conditions that all medical students should acquire prior to graduation.

“...although the diseases that kill attract much of the public’s attention, musculoskeletal or rheumatic diseases are the major cause of morbidity throughout the world, having a substantial influence on health and quality of life, and inflicting an enormous burden of cost on health systems ...”

World Health Organization 2003
Learning Objectives

Attitudes
First and foremost, medical schools must foster an appreciation for the complex effects musculoskeletal conditions have on afflicted patients. Students must come to understand that these conditions can severely affect a patient’s mobility, produce chronic pain, limit their independence, and result in serious psychological and financial consequences—each of which will affect adversely a patient’s quality of life. Given the nature of musculoskeletal conditions, students must appreciate that a comprehensive and holistic approach to care is critically important. In keeping with this, interdisciplinary and interprofessional care plays an important role in providing appropriate treatment for patients suffering with musculoskeletal conditions.

Prior to graduation, a medical student should have demonstrated, to the satisfaction of the faculty, the appreciation of the following:

• The frequent occurrence of musculoskeletal conditions across all age groups

• The physical, psychological, financial and other quality-of-life consequences of living with a chronic musculoskeletal condition

• The importance of interdisciplinary and inter-professional care in managing patients with a musculoskeletal condition

• The importance of pain management in caring for patients with musculoskeletal conditions

• Respect for the importance to patients of non-medical pain management.

Knowledge
Students should be knowledgeable about the clinical manifestations, pathology, and pathophysiology of common musculoskeletal conditions. And they should possess an understanding of the diagnostic tests that should be employed to confirm a diagnosis and the current approaches to the treatment of those conditions.

Prior to graduation, a medical student should have demonstrated, to the satisfaction of the faculty, understanding of the following:

• The clinical manifestations and natural history of common musculoskeletal conditions due to degenerative, infectious, metabolic, traumatic, and inflammatory causes

• A diagnostic approach and treatment plan for patients suffering from common musculoskeletal conditions due to degenerative, infectious, metabolic, traumatic, and inflammatory causes

• The impact of normal aging on musculoskeletal health

• The principles and practice of musculoskeletal injury prevention, and the role and principles of rehabilitation for musculoskeletal conditions

• The physiologic, pathologic, and sociologic issues relevant to the treatment of musculoskeletal diseases (i.e., adults and children with myopathic conditions, adults and children with rheumatoid arthritis, etc.)

• The physiologic, pathologic, and sociologic issues relevant to musculoskeletal conditions that are unique to childhood, with a particular emphasis on the impact of those conditions on normal development.

Conditions in Children
Though thorough education about adult injury conditions is important, the curriculum needs to be balanced with those seen frequently in the first two decades of life, including,

Osgood Schlatter, disease of the knee
Slipped capital femoral epiphysis (SCFE)
Legg-Calvé-Perthes, disease of the hip
Toxic synovitis
Non-accidental trauma
Typical fractures
Skills
Medical students must be able to conduct a musculoskeletal physical exam and be capable of identifying common musculoskeletal diseases and conditions, and initiating appropriate treatment for these patients.

Prior to graduation, a medical student should have demonstrated, to the satisfaction of the faculty, the following abilities:

- The ability to perform a thorough musculoskeletal history and physical on adults and children
- The ability to incorporate a 3-minute musculoskeletal exam into a routine screening physical exam
- The ability to interpret correctly x-rays and other images of the musculoskeletal system
- The ability to diagnose and initiate treatment for common musculoskeletal regional complaints (shoulder pain, neck pain, lower back pain), and uncomplicated injuries including fractures, polyarthritides, knee pain, and sports injuries
- The ability to identify musculoskeletal conditions which require urgent intervention and understand the reasons behind the urgency
- The ability to initiate appropriate treatment for musculoskeletal emergencies or refer the patient to a musculoskeletal specialist when indicated
- The ability to perform standard management procedures (e.g., splinting, aspiration, etc.).

Educational Strategies
Today’s students are exposed to important aspects of musculoskeletal medicine at various points in the curriculum. Relevant material should be presented in ways that allow students to gain a coherent view of the importance of musculoskeletal medicine as a distinct entity. Accordingly, medical schools should strive to integrate learning experiences relevant to musculoskeletal medicine throughout the curriculum in ways that explicitly identify the material as part of a coherent curriculum component. Since medical students’ impressions and attitudes are heavily influenced by what they observe in the clinical environment, it is essential that medical schools strive to create a more organized approach to how musculoskeletal medicine is practiced within the

Similar Symptoms, Different Diagnosis Along the Age Spectrum
Age is an important variable to consider when diagnosing a musculoskeletal condition. What more commonly manifests in the first two decades of life will not necessarily be the same problem that is common for adults.

For example: When a patient presents with hip pain, common underlying conditions include, for an

- 80 year-old, Fractured hip
- 50 year-old, Osteoarthritis or disc disease
- 25 year-old, Bursitis
- 7–11 year-old, Osteonecrosis or slipped capital-femoral epiphysis

When a patient presents with knee pain, common underlying conditions include, for a

- 50–80 year-old, Osteoarthritis
- 25 year-old, Patellar-femoral disease or meniscal tear
- 7–11 year-old, Hypermobility
academic environment. The fragmentation of musculoskeletal medicine is to a great extent related to the way that patients with musculoskeletal conditions are managed within the clinical environment—patients with various conditions fall under the care of physicians with substantially different clinical training, who are members of different departments and who often have quite different viewpoints on the management of those conditions. Despite this fragmentation, medical schools must strive to integrate learning to provide each student the essential attributes necessary for every future physician, and need to consider educational strategies regarding curriculum design, instructional implementation, and assessment that support this end. Examples include:

**Curriculum Design**
- Address fragmentation of musculoskeletal content in the curriculum by explicitly identifying the different points in the curriculum this content instruction is occurring and plan for insertion throughout all four years of the curriculum
- Inform students when they are receiving musculoskeletal medicine instruction, so they begin to recognize and associate the musculoskeletal thread between disciplines.

**Instructional Implementation**
- Use a focused systematic approach on common regional pain complaints to launch instruction on musculoskeletal conditions
- Incorporate clinical interdisciplinary instructors to exemplify the clinical approach to diagnosis and treatment of these conditions
- Organize the presentation and cross specialty nature of musculoskeletal medicine through a systematic case-based format using general areas of pain, such as neck pain, back pain, hip pain, shoulder pain, knee pain, and ankle/foot pain
- Develop optimal clinical experiences in musculoskeletal medicine by using clinical sites where musculoskeletal medicine is practiced, such as ambulatory clinics
- Under appropriate supervision, provide educational opportunities and feedback on hands-on learning experiences for students to develop and refine clinical skills
- Plan for opportunities for students to repeat and practice physical diagnosis skills of musculoskeletal medicine in outpatient settings
- When clinical training sites are not available, use Web-based cases to emphasize application of knowledge and reinforce the process of critical decision analysis
- In the absence of or lack of appropriate clinical training opportunities, present Web vignettes which include the socio-psychological components of suffering with a chronic musculoskeletal condition and the life-management impact such issues raise
- Use Web-based self-learning modules with musculoskeletal knowledge content and skill presentation
- Use workshop or small group format to demonstrate exam and diagnosis skills, including, but not limited to, the neck, back/hip, shoulder, knee, and ankle/foot
- Present vignettes in small groups to be followed by practice session and discussion follow-up in order that the case context and skill component can be fully integrated, as well as reinforcing appropriate connections

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**The “Anatomy” of a 3-minute Clerk’s Musculoskeletal Exam in the Routine Screening Physical Exam**

The musculoskeletal exam can be divided into three broad sections: visual inspection, palpation, and the evaluation of joint motion (LOOK, FEEL and MOVE.) First, the examiner evaluates the patient visually for signs of deformity, swelling, scars, inflammation or muscle atrophy. Second, surface anatomy landmarks are used to evaluate for localization of points of tenderness or fluid collection. Third, involved joints are moved actively by the patient, then passively by the examiner. If indicated, stress maneuvers are performed on joints in order to evaluate stability. By means of an orderly physical assessment of the axial and the appendicular skeleton, an anatomically detailed picture of musculoskeletal injury or illness is discerned. The musculoskeletal physical examination is performed following elicitation of a chief complaint and a history of the presenting condition, along with a review of systems, past medical and surgical history, review of medications and drug allergies, and a social history.
• Use common illustrations to present clinical reasoning and the analytical decision progression for assessment and treatment

• Create “teaching cases” that can be shared by all schools illustrating the integration of core principles and fundamental skill sets

• Teach from a learner-centered objective (learn it, retain it, repeat it, demonstrate it), to move away from learning for assessment purposes

• Work through a case history to track the cause and onset of a musculoskeletal condition, noting the financial impact for the patient and how loss-of-independence issues create complicating factors for treatment and disease management; consider the intersection between medical and nonmedical personnel in case management and quality-of-life improvement strategies

• Illustrate patient experience of living with musculoskeletal conditions by using a panel of actual patients or standardized patients to discuss the range of impact on daily life, from minor accommodations to life-altering adaptations.

Assessment

• Review and modify existing assessment tools for appropriate content of musculoskeletal attitudes, knowledge, and skills

• Integrate musculoskeletal conditions into existing OSCEs and/or create OSCEs with musculoskeletal conditions.

Common Injuries for the Major Joints

During medical school, students should be taught to understand and assess some of the more common injuries for the major joints.

• Neck: mechanical/myofascial neck pain, cervical radiculopathy, (cervical myelopathy)

• Shoulder: rotator cuff tendinitis/opathy, AC joint problems (arthritis, separation), anterior dislocation, biceps tendinitis/rupture

• Elbow: lateral and medial epicondylitis, radial head fracture, olecranon bursitis

• Wrist: DeQuervain’s tenosynovitis, carpal tunnel syndrome, scaphoid fracture

• Hip: trochanteric bursitis, osteoarthritis

• Lumbar spine: mechanical low back pain, lumbar radiculopathy, lumbar spinal stenosis, lumbar spondylolysis, and listhesis

• Knee: ligament sprains, including anterior cruciate ligament, meniscal tears, patellofemoral pain

• Ankle/foot: inversion sprains, Achilles tendinitis, plantar fasciitis
Gross Anatomy “Cartoon” Stick Figures

Students need to know how the bone and muscles work as a system of levers and pulleys—especially in a way that correlates with physical examination. Asking students as part of their exercises and exams to generate their own simple drawings (“cartoons”), see figure A, can give the teacher a good sense of how much the students know. This moves away from a semantic mastery of anatomy to a more visual one, and demands that students generate responses rather than merely recognize the correct answer. For instance, if the student can draw a schematic of the biceps similar to figure A, and compare it with an illustration, see figure B, the student implicitly demonstrates knowledge of the biceps’ function and the means to examine it. This is far preferable to memorizing a verbal description, i.e., “the long head of the biceps originates above the glenoid and joins the short head, which originates from the coracoid, to course along the anterior surface of the humerus…..” To draw the biceps, as shown here, is to know the biceps.

Schematic of the Biceps

Resources


2000-2010, International Decade of the Bone and Joint

“The purpose of the decade is to improve the health-related quality of life of people with bone and joint diseases and injuries worldwide by raising awareness and understanding of the importance of these severe conditions and increasing the amount of research funding.”


The Bone and Joint Decade is an independent global nonprofit organization whose mission is to improve the health-related quality of life for people affected by musculoskeletal disorders worldwide in the Decade of 2000–2010. It is the umbrella organization by which 58 National Action Networks and over 750 professional medical societies, patient advocacy groups, governments, industry, research institutions and publications partner to effect change by: (1) Raising awareness of the growing burden of musculoskeletal disorders on society; (2) Empowering patients to participate in their own care; (3) Promoting cost-effective prevention and treatment; and (4) Advancing understanding of musculoskeletal disorders through research to improve prevention and treatment.

Participating medical schools www.usbjd.org/friends

2002-2011, United States Bone and Joint Decade

On January 13, 2000 The Bone and Joint Decade was formally launched at the World Health Organization headquarters in Geneva, Switzerland. This came on the heels of the November 30, 1999 endorsement of the initiative by the United Nations... In the USA the National Bone and Joint Decade 2002-2011 was officially proclaimed by the President in March 2002. The Decade has been endorsed by all 50 U.S. States, over 90 U.S. patient and professional healthcare organizations, and more than 100 medical schools and colleges of medicine.

www.usbjd.org/about

www.boneandjointdecade.org
Musculoskeletal/Rehabilitation Clerkship: Mayo Clinic College of Medicine

Physical Medicine and Rehabilitation (PM&R) has been a required medical student rotation at the Mayo Clinic College of Medicine (Rochester, MN) for over 30 years. Since 1991, the PM&R/Musculoskeletal rotation, scheduled during the second year curriculum as part of their “clinical experience,” runs concurrent with didactic lectures in the basic sciences. During each rotation, four to seven students participate in three weeks of half-day (60 contact hours total) exposure to physical medicine and rehabilitation and musculoskeletal medicine. Between November and April, the entire second year medical school class of 40 to 45 students completes the rotation of seven three-week blocks.

This rotation coincides with the Mayo Clinic College of Medicine organ centered curriculum and places emphasis on clinical skills training and musculoskeletal testing. It provides education and skill training in musculoskeletal medicine and exposes students to the multidisciplinary management of patients with chronic disease and disability. During the first week of the rotation, the students are exposed to lectures and workshops designed to acquaint them with the basics of the history and physical examination applied to musculoskeletal and rehabilitation medicine. In addition, students receive education pertaining to spinal cord injury and brain injury. After the initial week of workshops, the students participate in a two-week clinical rotation of both inpatient and outpatient PM&R practice.

The workshop week includes intensive exposure to musculoskeletal medicine, with special emphasis on physical examination skills. Every effort is made to discuss general management principles that are pertinent to many different patient populations so that the information may be applicable to future primary care physicians and specialists. Physical examination techniques are emphasized for both inpatient and outpatient populations. Students have access to multimedia programs reviewing pertinent musculoskeletal examination techniques, including those provided by the American Academy of Orthopedic Surgery and additional multimedia produced “in house” to expand and supplement their experience.

Descriptions of each of the examination techniques have been compiled and made available on the rotation Web site accessible to all medical students. Reference books are available both on site at each of the student’s rotation locations and at the medical school learning resource center. Detailed handouts for each specific workshop are provided along with the aforementioned reference materials.

After the initial week of workshops and didactics, students are given a 114-item musculoskeletal skills acquisition test that assesses examination techniques for the following sections: cervical spine, lumbar spine, hip, knee, shoulder, and ankle.

The test is administered by physical therapists who work closely with course faculty to ensure evaluation consistency. Each item on the test carries a maximum credit of two points: one point for correctly performing the physical exam technique and one point for explaining the rationale/significance/meaning of the technique. Partial credit is also given. Students are graded on a pass/fail basis, although they must pass at least 70 percent of the items in a section to pass the section and all sections must be passed. Students must show competence in the musculoskeletal skills acquisition test to successfully pass the course. If a student fails the test, he/she must take remediation with the next group of students. (See sample of knee section of the skills acquisition test.)

The described rotation remains one of the core components of musculoskeletal curriculum in the Mayo Clinic College of Medicine. The second-year rotation is preceded by a weeklong course during the first-year curriculum, which serves as an introduction to musculoskeletal medicine. This 20-hour first-year course includes multispecialty faculty participation and case-based learning. Course components include an introduction to the musculoskeletal physical examination in addition to a discussion of biomechanics, kinetic chain theory, and the biology of joints as applied to musculoskeletal problems. In addition, musculoskeletal anatomy is taught during the first year gross and developmental anatomy course. Students have the opportunity to dissect all major joints in the upper and lower extremities and learn concepts pertinent to the musculoskeletal examination. Later in the third- and fourth-year curriculum, students have the opportunity to enhance their musculoskeletal skills by taking elective rotations as well as participating in half-day sessions that review components of the musculoskeletal physical examination.
## Mayo Clinic College of Medicine

### Knee Section of Musculoskeletal Skills Acquisition Test

<table>
<thead>
<tr>
<th>KNEE</th>
<th>PASS</th>
<th>P/C</th>
<th>FAIL</th>
</tr>
</thead>
</table>

#### Inspection:
- Genu valgum/varum
- Genu recurvatum

#### Assessment of range of motion: flexion, extension

#### Major anatomical landmarks in palpation:
- Joint lines—medial and lateral
- Patellar tendon
- Pes anserine bursa
- Medial and lateral collateral ligaments
- Tibial tuberosity
- Fibular head (proximity of common fibular nerve)

#### Assessment of fluid/effusion:
- Ballottement of patella
- Bulge sign

#### Flexibility:
- Hamstring tightness (popliteal angle)
- Ely test (rectus femoris tightness/contracture)

#### Assessment of ligament stability:
- Anterior cruciate ligament:
  - Anterior drawer
  - Lachman's test
- Posterior cruciate ligament:
  - Posterior drawer test
  - Posterior sag sign (observe/explain)
- Medial collateral ligament: valgus stress test at 0° and 30°
- Lateral collateral ligament: varus stress test at 0° and 30°
- Explain the general grading of ligament sprains (grades 1, 2, 3)

#### Assessment of patellofemoral mechanism:
- Patellar grind/crepitus
- Patellar apprehension
- Palpate medial and lateral patellar facets

#### Meniscal integrity testing:
- McMurry's test
- Hyperflexion test
- Bounce test

#### KNEE GRADE_____

(26 items x 2 = 52 pts; pass = 35 pts)
AAMC Curriculum Management & Information Tool (CurrMIT®)

In order to coordinate between courses in which musculoskeletal topics and issues are addressed, one must first identify where and when this content is offered to students. The AAMC’s Curriculum Management and Information Tool (CurrMIT) allows one to do just that, by tracking courses and content throughout the curriculum. This would be a necessary first step in addressing fragmentation and repetitive instruction.

CurrMIT is a password-protected, online database that offers a full array of support services designed to help medical schools manage and report on their curriculum. With CurrMIT, schools can obtain detailed comparisons of curricula among U.S. and Canadian medical schools; analyze the nation’s trends in medical education; support the efficient use of successful curriculum reform strategies by documenting and making available detailed information about ongoing reform and innovation; list information on course directors to foster networking about courses; identify teaching methods and materials being used around the country; and review sites used for teaching and learning, contact hours devoted to specific topics, and assessment techniques used to determine whether pre-defined objectives are being met.

The following reports generated from CurrMIT demonstrates how three different medical schools integrate the teaching of musculoskeletal topics into various courses during the second and third years of the curriculum.

### Institution No. 1

<table>
<thead>
<tr>
<th>Course Name</th>
<th>Academic Year</th>
<th>Topic Covered During Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epidemiology</td>
<td>2</td>
<td>musculoskeletal disorder-rheumatoid arthritis, osteoarthritis-adult</td>
</tr>
<tr>
<td>Introduction to Clinical Medicine</td>
<td>2</td>
<td>musculoskeletal disorder-rheumatoid arthritis, osteoarthritis-adult</td>
</tr>
<tr>
<td>Systemic Pathology</td>
<td>2</td>
<td>musculoskeletal disorder-rheumatoid arthritis, osteoarthritis-adult</td>
</tr>
<tr>
<td>Family Medicine</td>
<td>3</td>
<td>musculoskeletal disorder-rheumatoid arthritis, osteoarthritis-adult</td>
</tr>
<tr>
<td>Medicine</td>
<td>3</td>
<td>musculoskeletal disorder-rheumatoid arthritis, osteoarthritis-adult</td>
</tr>
<tr>
<td>Obstetrics-Gynecology</td>
<td>3</td>
<td>musculoskeletal disorder-rheumatoid arthritis, osteoarthritis-adult</td>
</tr>
<tr>
<td>Pediatrics</td>
<td>3</td>
<td>musculoskeletal disorder-rheumatoid arthritis, osteoarthritis-adult</td>
</tr>
</tbody>
</table>

Access to CurrMIT is limited to faculty and administrators of U.S. and Canadian medical schools. Access is provided through the office of medical education (or equivalent) at each school or by contacting helpcurrmit@aamc.org.

**CurrMIT Citation:**
Association of American Medical Colleges. *AAMC Curriculum Management & Information Tool*
www.aamc.org/currmit (July 5, 2005)
One school of medicine is using CurrMIT to identify musculoskeletal lectures taught across their multiple campuses, by including a campus code that precedes the course name (shown here as 1, 2, 3, 4, 5, 6, and 7) they are able to track the different campus locations at which musculoskeletal instruction is occurring.

### Institution No. 2

<table>
<thead>
<tr>
<th>Course Name</th>
<th>Academic Year</th>
<th>Lecture Title Within Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Human Gross Anatomy and Embryology</td>
<td>1</td>
<td>autonomic n.s. / dev. musculoskeletal system</td>
</tr>
<tr>
<td>2. Human Structure - Step 2</td>
<td>1</td>
<td>Step 2 - Case 4</td>
</tr>
<tr>
<td>3. Systemic Pathology</td>
<td>2</td>
<td>dermpath, musculoskeletal i</td>
</tr>
<tr>
<td>3. Systemic Pathology</td>
<td>2</td>
<td>dermpath, musculoskeletal ii</td>
</tr>
<tr>
<td>3. Systemic Pathology</td>
<td>2</td>
<td>dermpath, musculoskeletal iii</td>
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<tr>
<td>4. Introduction to Medicine II</td>
<td>2</td>
<td>musculoskeletal exam</td>
</tr>
<tr>
<td>4. Introduction to Medicine II</td>
<td>2</td>
<td>musculoskeletal &amp; skin</td>
</tr>
<tr>
<td>5. Introduction to Medicine</td>
<td>2</td>
<td>physical diagnosis vi - musculoskeletal system</td>
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<td>5. Introduction to Medicine</td>
<td>2</td>
<td>radiology 7 - musculoskeletal radiology</td>
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<tr>
<td>5. Systemic Pathology</td>
<td>2</td>
<td>musculoskeletal, head &amp; neck, gross, micro and kodachromes</td>
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<td>5. Systemic Pathology</td>
<td>2</td>
<td>musculoskeletal i</td>
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<tr>
<td>5. Systemic Pathology</td>
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<td>5. Systemic Pathology</td>
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<td>5. Systemic Pathology</td>
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<td>2</td>
<td>musculoskeletal v</td>
</tr>
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<td>6. Systemic Pathology</td>
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<td>musculoskeletal system i (lab #24)</td>
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<td>6. Systemic Pathology</td>
<td>2</td>
<td>musculoskeletal system ii (lab #26)</td>
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<td>7. Introduction to Medicine II</td>
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<td>musculoskeletal exam</td>
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<td>7. Introduction to Medicine II</td>
<td>2</td>
<td>musculoskeletal exam demonstration and workshop</td>
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<td>7. Introduction to Medicine II</td>
<td>2</td>
<td>musculoskeletal; manifestations of metabolic diseases; osteoporosis</td>
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The following report demonstrates how Institution No. 3 is using CurrMIT to track the integration of musculoskeletal topics into their Problem Based Learning (PBL) curriculum.

### Institution No. 3

<table>
<thead>
<tr>
<th>Course Name</th>
<th>Academic Year</th>
<th>Problem Based Learning, Lecture, Lab, or Small Group Discussion</th>
<th>Topics Covered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross &amp; Developmental Anatomy</td>
<td>1</td>
<td>Anterior Abdominal (musculoskeletal system)</td>
<td>normal processes</td>
</tr>
<tr>
<td>Gross &amp; Developmental Anatomy</td>
<td>1</td>
<td>Applications of Head and Neck Anatomy in Oral and Maxillofacial Surgery</td>
<td>principles of therapeutics (musculoskeletal system)</td>
</tr>
<tr>
<td>Gross &amp; Developmental Anatomy</td>
<td>1</td>
<td>Applications of Head and Neck Anatomy in Oral and Maxillofacial Surgery</td>
<td>psychosocial, cultural, occupational, and environmental considerations (musculoskeletal system)</td>
</tr>
<tr>
<td>Gross &amp; Developmental Anatomy</td>
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<td>Anterior and Medial Thigh</td>
<td>normal processes (musculoskeletal system)</td>
</tr>
<tr>
<td>Gross &amp; Developmental Anatomy</td>
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<td>Buttock, Hip Joint, Posterior Thigh</td>
<td>normal processes (musculoskeletal system)</td>
</tr>
<tr>
<td>Gross &amp; Developmental Anatomy</td>
<td>1</td>
<td>Buttock, Hip Joint, Posterior Thigh</td>
<td>abnormal processes (musculoskeletal system)</td>
</tr>
<tr>
<td>Gross &amp; Developmental Anatomy</td>
<td>1</td>
<td>Leg and Foot I</td>
<td>normal processes (musculoskeletal system)</td>
</tr>
<tr>
<td>Introduction to the Patient</td>
<td>1</td>
<td>Neck and musculoskeletal exam</td>
<td>musculoskeletal exam</td>
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<td>Introduction to the Patient</td>
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<td>Neck and musculoskeletal exam</td>
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<td>Family Medicine - Year 2</td>
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<td>Outpatient experience</td>
<td>diseases of the musculoskeletal system and connective tissue (general)</td>
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<td>prevention of disability due to musculoskeletal disorders or infection (e.g., osteomyelitis, septic arthritis, lyme disease, gonococcal tenosynovitis)</td>
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### Institution No. 3 (Continued)

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<tr>
<th>Course Name</th>
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<th>Problem Based Learning, Lecture, Lab, or Small Group Discussion</th>
<th>Topics Covered</th>
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<td>mechanisms of action and therapeutic effects of drugs for treatment of disorders of the musculoskeletal system (e.g., nsaids, muscle relaxants, antigout drugs, immunsuppressives, cytotoxic agents, drugs for metabolic bone disorders)</td>
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Report VII
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Medical School Objectives Project

September 2005