The Core Competencies for the Mount Sinai School of Medicine

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Committee for the Development of the Core Competencies

The Mount Sinai School of Medicine (MSSM) is undergoing a major revision of its curriculum. To guide the development of the new curriculum, a group of educators from the basic and clinical sciences have defined the core competencies that graduates of our school will be expected to demonstrate by the end of their training.

This report will outline how the competencies were developed, present the competencies, and anticipate steps in their implementation.

Curriculum Reform at the Mount Sinai School of Medicine

The school’s mission statement is “to train outstanding physicians and scientists who are prepared to enter society as informed advocates and activists, able to advance science and clinical care, and capable of promoting change.”

The new competency-based curriculum will (1) provide for an experience that is broader and deeper than traditional models of medical education, (2) will promote self-directed and lifelong learning and (3) will aim to integrate learning across scientific disciplines as well as between basic and clinical sciences. Longitudinal clinical experiences will be a major focus of training. Education will be patient-centered, service-oriented and informed by the humanities. Scholarship and investigation will receive major emphasis, with dedicated time for independent, mentored projects.

Competency-Based Medical Education

Competencies, essential abilities that physicians must possess, are used throughout the medical education continuum. Development of a competency-based educational program starts by carefully defining the end product of the educational endeavor. Competencies focus the educational experiences, environments, standards and assessments.

The Accreditation Council for Graduate Medical Education (ACGME) introduced the General Competencies in 1999. This broad set of skills and abilities is meant to serve as a framework for graduate medical education, and each training program, regardless of specialty, is responsible for documenting its trainees’ progress within the competency framework. The ACGME competencies are:

- Patient Care
- Medical Knowledge
- Practice-Based Learning and Improvement
- Interpersonal and Communication Skills

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• Professionalism
• Systems-based Practice

Maintenance of certification through the American Board of Medical Specialties (ABMS) requires physicians to demonstrate competence across these six areas. Also, the Joint Commission will mandate that hospitals credential their staff using the ACGME competencies. Therefore, all physicians will be expected to demonstrate competence in the same six areas beginning in residency and continuing throughout their careers.

At the undergraduate medical education (UME) level, the Association of American Medical Colleges, with broad input from national leaders in medical education, published the Learning Objectives for Medical Student Education in 1998 as part of its Medical School Objectives Project (MSOP). This endeavor aimed to define the essential attributes physicians would need in order to fulfill their duty to society. Four broad learning objectives were proposed:

• Physicians must be altruistic
• Physicians must be knowledgeable
• Physicians must be skillful
• Physicians must be dutiful

While not required for school accreditation or for physician certification, the AAMC encouraged medical schools to use these objectives for program development. These objectives emphasize the obligation physicians have to society in a much more explicit way than the ACGME competencies.

A number of U.S. medical schools have adopted or adapted the ACGME competencies to their undergraduate curricula. Other schools have developed competencies that reflect their own missions and resources, and there have been other competency formulations for undergraduate medical education at a national and international level. (See Appendix A for other competency formulations from U.S. medical schools.)

Developing the MSSM Competencies

In the spring of 2007 the MSSM leadership charged a committee with the task of developing the core competencies for the new curriculum. Committee members included Dr. Peter Gliatto (co-chair), Dr. David Bechhofer (co-chair), Dr. Patrick Lento and Dr. Reena Karani.

To achieve this task, the committee reviewed pertinent educational literature on competency-based education, examined competency models at undergraduate and graduate medical levels, both in the United States and internationally, and
met with MSSM leadership to discuss the new mission statement and goals of the medical school.

The committee aimed to create competencies that would (1) reflect the mission statement and broad goals of the new curriculum, (2) be appropriate for the UME level and (3) align with the ACGME competencies.

The ACGME competencies served as a model for the committee. As noted, the ACGME competencies apply across the medical education continuum, from graduate medical education to recertification and accreditation processes. Mount Sinai graduates will be educated and evaluated in this framework. In light of the differences between UME and GME and the unique features of our school and its mission, the committee adapted the ACGME framework into four competency categories:

- Patient Care
- Scientific and Medical Knowledge
- Learning, Scholarship and Collaboration
- Professionalism and Advocacy

The competency committee felt that the ACGME competency Interpersonal and Communication Skills had many elements important for student education but the skills emphasized in this heading were also relevant to Patient Care or Professionalism. For example, the committee considered that communication skills were so essential to patient care that they should be placed under that heading. Therefore, Interpersonal and Communication Skills was not adopted as a separate competency within the MSSM model but was, rather, folded in where appropriate.

The ACGME competency Systems-based Practice represents a resident’s “ability to demonstrate an awareness of and responsiveness to the larger context and system of health care and the ability to effectively call on system resources to provide care that is of optimal value.” Residents are expected to be aware of what services are available to patients, to interact effectively with other healthcare professionals and paraprofessionals, and to advocate for the needs of their patients. This competency also encompasses knowledge of cost and resource allocation. While it is very important for students to know about healthcare systems and it is essential that they begin to understand how teams of professionals and paraprofessionals interact to provide care, components of Systems-based Practice seemed to extend beyond the UME level. A physician in practice requires an expansive understanding of health care systems, and an ability to utilize them, but a new graduate should have a fundamental knowledge of such systems. As such, the committee elected to incorporate some of the pertinent elements from Systems-based Practice into the MSSM competencies Scientific and Medical Knowledge and Learning, Scholarship and Collaboration.
In summary, the committee developed the four MSSM competencies after carefully examining the ACGME competencies, the Learning Objectives from the AAMC, other competency models, and the mission statement and broad goals of the new MSSM curriculum (see Fig. 1).

The MSSM Competencies are interrelated. *Learning, Scholarship and Collaboration* and *Patient Care* are activities in which students actually engage. Students will continue to develop patient care skills on a much deeper level in residency and beyond, but the attitudes and skills of being a conscientious and curious learner are best laid early on in the process of professional development. *Learning* informs *Care*: as a student interacts more with patients, learning becomes less about performance on an examination and more about service to a patient. Earlier and longer exposure to patients will strengthen this connection. *Professionalism and Advocacy* and *Scientific and Medical Knowledge* enable, inform and legitimize *Learning* and *Care*.

**Expanding the MSSM Competencies**

Once the committee defined the four competency categories, it added broad subheadings to each category. The four MSSM competency categories, and the first tier of subheadings, are outlined in Table 1.
<table>
<thead>
<tr>
<th>Competency 1: Patient Care</th>
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<tbody>
<tr>
<td>• History taking</td>
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<td>• Physical examination</td>
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<td>• Procedural skills</td>
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<tr>
<td>• Clinical reasoning</td>
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<td>• Medical decision making</td>
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<td>• Communication skills</td>
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<tr>
<th>Competency 2: Scientific and Medical Knowledge</th>
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<tr>
<td>• Organ structure and function</td>
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<tr>
<td>• Characteristics and mechanisms of disease</td>
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<tr>
<td>• Healing and therapeutics</td>
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<tr>
<td>• Social and cultural dimensions of health and disease</td>
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<tr>
<td>• Healthcare resources and delivery systems</td>
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<td>• Ethical principles of medical practice</td>
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<tr>
<th>Competency 3: Learning, Scholarship, and Collaboration</th>
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<td>• Self-awareness and commitment to self-improvement</td>
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<tr>
<td>• Curiosity</td>
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<tr>
<td>• Methods of investigation, analysis and dissemination</td>
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<td>• Teamwork</td>
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<th>Competency 4: Professionalism and Advocacy</th>
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<td>• Service</td>
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<td>• Accountability</td>
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<tr>
<td>• Honesty and integrity</td>
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<td>• Empathy</td>
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<td>• Respect</td>
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A sub-committee for each of the proposed competencies was created to expand the competencies and further define the core elements. Each subcommittee had five to six members and represented a broad spectrum of stakeholder levels (from student to full professor) and disciplines, with faculty from both basic science and clinical departments. (See Appendix B for a listing of the subcommittee participants).

The subcommittees helped to further define the next tier under each competency, and were expected to phrase their contributions in terms of a skill or behavior. (See Fig. 2)

All subcommittees reported back to the core committee within four months. The core committee then reviewed the subcommittees' work, incorporating their suggestions while ensuring an appropriate level of detail and a uniformity of language. Competency suggestions from each subcommittee were scrutinized by applying a definition of competencies derived from Albanese, Mejicano, Mullan et al11 and Harden.12 According to this definition, competencies should:

- Reflect the vision and mission of the institution;
- Be clear and unambiguous;
- Be manageable in terms of the number of outcomes;
- Be defined at an appropriate level of generality;
- Focus on what the new graduate should be able to do;
- Reflect expectations that are an application of what is learned in the immediate instructional program;
- Be expressible in terms of measurable behaviors; and
- Inform learners, as well as other stakeholders, what is expected of them.
The completed core MSSM competencies are listed on the following pages.

The Core MSSM Competencies

Competency 1: Patient Care

MSSM graduates will be able to obtain and interpret clinical data, act judiciously, and communicate effectively with patients, colleagues and staff.

- **History taking**
  - Establish a safe and comfortable environment to allow for a patient to provide a confidential history.
  - Conduct an interview that is appropriate to the patient’s age and the clinical venue.
  - Conduct a comprehensive interview that is organized and efficient and includes the appropriate elements of the history (i.e., present illness, past illnesses and surgeries, medications and allergies, social history, family history, and review of systems.)
  - Incorporate additional sources of information, including the medical record and perspectives of caregivers.

- **Physical examination**
  - Establish a safe and comfortable environment for the physical examination, respecting the patient's privacy and dignity and counseling the patient about what to expect during the exam.
  - Conduct an exam that is appropriate to the patient's age and the clinical venue.
  - Conduct a comprehensive physical exam that is organized, efficient and technically correct, focusing on organ systems related to the chief complaint.

- **Procedural skills**
  - Practice universal precautions and sterile technique.
  - Describe indications for and potential complications of basic procedures and demonstrate correct techniques for such procedures.
  - Describe indications for and potential complications of commonly performed advanced procedures.

- **Clinical reasoning**
  - Integrate and interpret data from medical history, patient records, physical exam, and diagnostic procedures to generate a prioritized patient problem list and differential diagnosis.
  - Recognize patients who require emergent assessment and management.
• Recognize when screening for disease is appropriate.

• Medical decision making
  o Initiate diagnostic and management plans with attention to medical evidence, acuity of illness, risk-benefit estimations, patient and/or family preferences, consideration of cost and availability of therapies.
  o Recognize when specialty consultation is required.
  o Plan for transitions of care.

• Communication skills
  o Communicate information honestly, accurately, reliably, empathically, and in a culturally sensitive manner with patients and their families and/or caregivers.
  o Communicate effectively with other medical professionals and personnel.
  o Listen actively to patients, their families and/or caregivers, and all members of the healthcare team.
  o Recognize non-verbal cues such as body language and facial expression.
  o Educate and counsel patients about plans of care, health promotion and disease prevention.
  o Record clinical information and reasoning in the medical record clearly, reliably and accurately.

Competency 2: Scientific and Medical Knowledge

MSSM graduates will have the knowledge and analytic abilities to engage in problem solving at multiple levels, from the individual patient to the healthcare system.

• Organ structure and function
  o Describe the anatomy, histology and physiology of organs and organ systems.
  o Recognize the cellular and molecular basis of tissue specificity.
  o Recognize major biochemical pathways that underlie normal cell function.
  o Describe the changes that occur to organs and organ systems in development and aging.

• Characteristics and mechanisms of disease
  o Recognize the molecular and genetic basis of disease.
  o Describe the structural changes and physiologic alterations that underlie disease states.
o Describe the incidence of, prevalence of, and risk factors for major diseases.
o Recognize and interpret the clinical manifestations of major diseases.
o Develop prognoses based on the natural history of disease.

• Healing and therapeutics
  o Describe immunologic responses to pathogens and disease states.
o Recognize reparative responses to cell and tissue injury.
o Describe the actions, side effects and interactions of major therapeutic agents.
o Describe non-pharmacologic approaches to disease and symptom management.

• Social and cultural dimensions of health and disease
  o Recognize the impact of cultural beliefs and practices on health, disease and treatment.
o Recognize the impact of socioeconomic factors on health, disease and treatment.
o Recognize the impact of gender, sexuality, religion and spirituality, ethnicity and race on health, disease and treatment.

• Healthcare resources and delivery systems
  o Identify the healthcare needs of communities.
o Identify available models of and barriers to organizing, financing and delivering healthcare to patients and communities.
o Describe major components and functions of the U.S. healthcare system and contrast them with other healthcare systems.

• Ethical principles of medical practice
  o Explain the principles of autonomy, beneficence, non-maleficence, and justice.
o Recognize ethical dilemmas in medical practice.
o Recognize the effects of laws and policies on healthcare.

Competency 3: Learning, Scholarship, and Collaboration

MSSM graduates will be inquisitive and reflective learners and practitioners who will think creatively and work effectively with others.

• Self-awareness and commitment to self-improvement
  o Identify personal strengths, limitations and biases.
o Recognize when and how to seek assistance.
o Actively solicit and incorporate feedback into practice.
o Attend to one’s own physical and emotional health.
o Recognize one’s evolving role in patient care, teaching and inquiry.

- Curiosity
  o Be open to new ideas, perspectives and experiences.
  o Carefully observe and critically examine phenomena.
  o Formulate questions that will drive learning and investigation.

- Methods of investigation, analysis and dissemination
  o Use appropriate informational resources to facilitate learning and to inform patient care.
  o Engage in scholarly activity relevant to health and disease and present scholarly work in oral and written formats.

- Teamwork
  o Engage in group learning and peer and colleague teaching.
  o Recognize the role of other medical professionals and support staff.
  o Work effectively as part of the medical team.

Competency 4: Professionalism and Advocacy

MSSM graduates will use their knowledge and skills responsibly to serve the needs of patients and society.

- Service
  o Be cognizant of the vulnerabilities of patients.
  o Show concern for the basic needs and life circumstances of patients.
  o Place the healthcare needs of patients above one’s own needs.
  o Demonstrate a commitment to the healthcare needs of communities.
  o Promote the needs of individual patients and communities to those responsible for meeting such needs.

- Accountability
  o Assume responsibility for one’s own actions.
  o Consistently follow up with learning tasks and patient care.
  o Adhere to standards of medical practice.
  o Acknowledge and report medical errors and potential errors.
  o Demonstrate a commitment to quality improvement.

- Honesty and Integrity
  o Be honest in clinical interactions, educational activities and scholarly work.
  o Accurately represent one’s role and capabilities
  o Recognize potential conflicts of interest.
• Empathy
  o Regard the experiences and conditions of patients with compassion.
  o Respond to the emotional needs of patients and their caregivers.

• Respect
  o Acknowledge and protect the dignity of patients.
  o Act in a non-judgmental manner toward patients and caregivers.
  o Ensure the privacy of patient health information.
  o Value the perspectives, experiences and skills of others.
  o Present oneself in a manner appropriate to the setting and activity.

Next Steps

Harden\textsuperscript{13} proposed nine steps for competency-based education design and implementation:

- Statement of learning outcomes
- Communication with staff/students
- Educational strategies
- Learning opportunities
- Course content
- Student progression
- Assessment
- Educational environment
- Student selection

The Competencies Committee has defined the learning outcomes for the MSSM curriculum. The committee’s remaining task will be to communicate the competencies to the broader MSSM community. These competencies will serve as a framework to develop our new curriculum, including educational strategies, learning opportunities and assessment methods. Separate committees will carry out the next steps in the curriculum development.
## Appendix A: Comparison of Competency Formulations

<table>
<thead>
<tr>
<th>ACGME</th>
<th>Halpern et al\textsuperscript{14}</th>
<th>AAMC clinical skills competencies</th>
<th>UCSF</th>
<th>Indiana</th>
<th>Case Western</th>
<th>Mount Sinai</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient care</td>
<td>--Medical management --Preventative care --Population-based care</td>
<td>--History taking --Mental and physical examination --Clinical testing --Clinical procedures --Information management --Diagnostic skill --Treatment, prevention and palliation --Prognosis skill</td>
<td>Clinical skills</td>
<td>--Basic Clinical Skills --Social and Community aspects of health care</td>
<td>Clinical mastery</td>
<td>Patient care</td>
</tr>
<tr>
<td>Medical knowledge</td>
<td>Information management and technology</td>
<td>Application of scientific knowledge</td>
<td>Scientific Foundations</td>
<td>Using science to guide diagnosis, management, therapeutics and prevention</td>
<td></td>
<td>Scientific and medical knowledge</td>
</tr>
<tr>
<td>Practice-based learning and improvement</td>
<td>--Quality measurement and improvement --Practice management</td>
<td>All categories</td>
<td>Learning, scholarship and leadership</td>
<td>--Lifelong learning --Problem solving --Research and scholarship --Leadership</td>
<td></td>
<td>Learning, scholarship and collaboration</td>
</tr>
<tr>
<td>Interpersonal and communication skills</td>
<td>Physician-patient communication</td>
<td>Patient engagement and communication</td>
<td>Effective communication</td>
<td></td>
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<td>Included in “Professionalism” and “Patient care”</td>
</tr>
<tr>
<td>Professionalism</td>
<td>Ethics</td>
<td>Professionalism</td>
<td>Professionalism</td>
<td>--Self-awareness, self-care, and personal growth --Moral reasoning and ethical judgment --Professionalism and role recognition</td>
<td>Civic professionalism</td>
<td>Professionalism and advocacy</td>
</tr>
<tr>
<td>Systems-based practice</td>
<td>Health care system overview --Teamwork and collaboration</td>
<td>Care in context skills</td>
<td>The social and community contexts of health care</td>
<td></td>
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<td>Included in “Medical and scientific knowledge” and “Professionalism and advocacy”</td>
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</table>
Appendix B: Core Competency Subcommittees

Competency 1: Patient Care

Audrey Chun M.D. (Chair)
Assistant Professor
Department of Geriatrics

Sharif Ellozy, M.D.
Assistant Professor,
Department of Surgery

Neil Parikh
Medical Student

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Jessica Zeidman
Medical Student

Competency 2: Scientific and Medical Knowledge

Steve Dikman, M.D. (Chair)
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Department of Pathology

Leslie Kerr, M.D.
Associate Professor
Department of Medicine

Aleksey Lazarev
Medical Student

Mike Lipkowitz, M.D.
Associate Professor
Department of Medicine

Lauren Peccoralo, M.D.
Chief Resident
Department of Medicine

Michelle Wilson
Medical Student
Competency 3: Learning, Scholarship, and Collaboration

Karen Zier, Ph.D. (Chair)
Associate Dean of Medical Student Research
Professor
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Rebecca Karp
Medical Student

Goutham Narla, M.D. Ph.D.
Assistant Professor, Medicine and Genetics and Genomic Medicine
Director, Physician Scientist Training, Residency Program
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Department of Medicine

Zachary McClain
Medical Student

Dan Perl, M.D.
Professor
Department of Pathology

Andrea Wershof Schwartz
Medical Student


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