PROFESSIONAL DEVELOPMENT

Core Competencies in Hospital Medicine: Development and Methodology

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⁵ Department of Medicine, University of California, Irvine, Orange, California **BACKGROUND:** The hospitalist model of inpatient care has been rapidly expanding over the last decade, with significant growth related to the quality and efficiency of care provision. This growth and development have stimulated a need to better define and characterize the field of hospital medicine. Training and developing curricula specific to hospital medicine are the next step in the evolution of the field. **METHODS:** *The Core Competencies in Hospital Medicine: A Framework for Curriculum Development* (the Core Competencies), by the Society of Hospital Medicine, introduces the expectations of hospitalists and provides an initial structural framework to guide medical educators in developing curricula that incorporate these competencies into the training and evaluation of students, clinicians-in-training, and practicing hospitalists. This article outlines the process that was undertaken to develop the Core Competencies, which included formation of a task force and editorial board, development of a topic list, the solicitation for and writing of chapters, and the execution of multiple reviews by the editorial board and both internal and external reviewers.

RESULTS: This process culminated in the Core Competencies document, which is divided into three sections: Clinical Conditions, Procedures, and Healthcare Systems. The chapters in each section delineate the core knowledge, skills, and attitudes necessary for effective inpatient practice while also incorporating a systems organization and improvement approach to care coordination and optimization.

CONCLUSIONS: These competencies should be a common reference and foundation for the creation of hospital medicine curricula and serve to standardize and improve inpatient training practices. *Journal of Hospital Medicine* 2006;1:48–56. © 2006 Society of Hospital Medicine.

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dentification of the core competencies of a medical specialty provides the necessary framework for that specialty to develop, refine itself, and evolve. It also provides a structure from which training, testing, and curricula can be developed and effectively utilized. For nearly a decade, since the coining of the term *hospitalist*,¹ the field of hospital medicine has been emerging as the next generation of site-defined specialties, after emergency medicine and critical care medicine. *The Core Competencies in Hospital Medicine: A Framework for Curriculum Development* (referred to as the Core Competencies from this point on) introduces the expectations of hospitalists, helps to define their role, and suggests how knowledge, skill, and attitude acquisition might be evaluated. Furthermore, this document provides an initial structural framework from which curricula in adult hospital medicine may be developed.

The Core Competencies document, produced by the Society of Hospital Medicine (SHM) and published as a supplement to the first issue of the Journal of Hospital Medicine,² is meant to serve as a framework for educators at all levels of medical education to develop curricula, training, and evaluations for students, clinicians-in-training, and practicing hospitalists. The Core Competencies document is not meant to contain a complete compilation of inpatient clinical topics or to re-create what many residency training programs in adult inpatient care already provide. It should not limit and does not define every aspect of hospitalist practice. It includes the most common and fundamental elements of inpatient care without exhaustively listing every clinical entity that may be encountered by a hospitalist. Some of the more common clinical topics encountered by inpatient physicians are included, with an emphasis on subject areas that stress a systems-based approach to health care, which is central to the practice of hospital medicine. This initial version of the Core Competencies document also focuses on potential areas of deficiency in the training of physicians to become hospitalists. It provides developers of curricula and content with a standardized set of measurable learning objectives, while allowing them the flexibility needed to address specific contexts and incorporate advances in medicine.

The SHM, the sole professional organization representing inpatient physicians, defines hospitalists as "physicians whose primary professional focus is the general medical care of hospitalized patients. Their activities include patient care, teaching, research, and leadership related to Hospital Medicine."³ An estimated 12,000 hospitalists are currently practicing in the United States, with a projected workforce need of an estimated 20,000-30,000 practicing hospitalists in the United States in the next 5–10 years.⁴ Various factors have contributed to the rapid growth and expansion of hospital medicine, including factors related to care efficiency, care quality, and inpatient teaching.⁵⁻¹² The pressures that have contributed to the development of and evolution toward the hospitalist model of care over the past decade are facilitating the transformation from a traditional model of inpatient care to the care of inpatients by hospitalist physicians dedicated primarily to the inpatient setting. As a result of this growth in hospital medicine, the SHM realized that core competencies were needed to help define the field.

The purpose of this article is to describe the developmental process and content structure of the Core Competencies document. It delineates the process from initial needs assessment to topic list development to chapter production to internal and external review and revisions of individual chapters and the complete document. The supplement to this first issue of the Journal of Hospital Medicine contains 1) the Core Competencies,² 2) a reprint of this article, and 3) a reprint of the article by McKean et al. in this issue detailing how to use the Core Competencies,¹³ with examples and suggestions related to curriculum development. The authors propose that this combined compilation may spur curriculum development in hospital medicine that will help to define the field and set expectations for practice.

PROCESS AND TIMELINE Education Summit

Early in the growth of hospital medicine, the Society of Hospital Medicine identified a need to better define a common educational and practice framework for hospitalist physicians. Such a framework could help to define hospitalists as a distinct group of practicing physicians with common goals and a common set of competencies. The importance of identifying and delineating the common knowledge, skills, and attitudes of hospitalists was paramount. Figure 1 shows the details of the 4-year process of developing the Core Competencies.

In 2002, the SHM drew together educational leaders in hospital medicine in its first educational summit. One of the primary charges that the SHM received from this summit was to develop the needed core curriculum in hospital medicine. After the summit, the SHM's Education Committee formed the Core Curriculum Task Force (CCTF), composed of approximately 15 member hospitalists, with representation from university and community hospitals, teaching and nonteaching programs, and for-profit and not-for-profit settings from various geographic regions of the country. The selection process ensured that the task force was representative of practicing hospitalists and SHM membership throughout the United States.

The CCTF

The task force met through frequent conferencecall meetings and at least one in-person meeting annually. The primary goal set forth by the task force was the initial development of a distinct set of

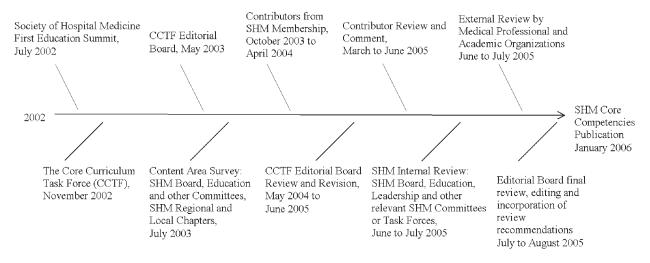


FIGURE 1. Process and timeline.

core competencies in hospital medicine that could then guide curriculum development within the field.

Topic List

The task force determined that the topics (or chapters) should be divided into three sections-Clinical Conditions, Procedures, and Healthcare Systems (Table 1, Chapter List)-all integral components of the practice of hospital medicine. For Clinical Conditions chapters, the task force decided that an exhaustive listing of all potential clinical entities that hospitalists might encounter during their clinical practice was not the goal of the Core Competencies. Rather, clinical topics were selected to reflect conditions in the hospital setting that are encountered with significant frequency, that might be significantly life-threatening, or that are likely to have the significant involvement and impact of hospitalists in altering or refining care processes, leading to improvement in care quality and efficiency. The list of Clinical Condition chapters should not limit or rigidly define the scope of practice of hospitalist physicians. Instead, it should help those entering the field of hospital medicine better understand some of the core clinical topics on which hospitalists focus in the design of institutional or global quality initiatives.

Clinical Conditions Section

In an effort to both narrow and delineate the core Clinical Condition areas necessary for practicing hospital medicine, the task force elected first to draw from national data the most common diagnosis-related groups (DRGs) discharged from U.S. hospitals. Utilizing the Medicare database, the top 15 nonsurgical discharge diagnoses were initially selected. Certain clinical conditions that the task force believed to be highly relevant to the practice of hospital medicine but that did not neatly fall into a specific DRG, such as pain management and perioperative medicine, were proposed for and then added to the list of Clinical Conditions chapters by the task force. Other chapters, such as that on venous thromboembolism, were added because a particular disease, although not necessarily a highranked discharge DRG, showed high inpatient morbidity and mortality and reflected the role of the hospitalist in the prevention of predictable complications during hospitalization. When possible, some diagnoses were consolidated to better incorporate crosscutting competencies or to highlight opportunities for leadership in systems-based improvements. For example, upper and lower gastrointestinal bleeding were consolidated into the chapter on gastrointestinal bleeding. Similarly, all relevant arrhythmias that a hospitalist might encounter were consolidated into a single chapter. For at least one clinical topic, pneumonia, the task force believed it necessary to have two distinct chapters, one on community-acquired pneumonia and the other on hospital-acquired pneumonia, because these two entities are significantly different and have distinct competencies. The final listing of Clinical Conditions chapters reflects 19 clinical areas that hospitalists encounter on a frequent basis

 TABLE 1

 List of Chapters of the Core Competencies in Hospital Medicine

Clinical Conditions*	Procedures	Healthcare Systems
Acute Coronary Syndrome Acute Renal Failure Alcohol and Drug Withdrawal Asthma Cardiac Arrhythmia Cellulitis Chronic Obstructive Pulmonary Disease Community-Acquired Pneumonia Congestive Heart Failure Delirium and Dementia	Procedures Arthrocentesis Chest Radiograph Interpretation Electrocardiogram Interpretation Emergency Procedures Lumbar Puncture Paracentesis Thoracentesis Vascular Access	Care of the Elderly Patient Care of Vulnerable Populations Communication Diagnostic Decision Making Drug Safety, Pharmacoeconomics and Pharmacoepidemiology Equitable Allocation of Resources Evidence-Based Medicine Hospitalist as Consultant Hospitalist as Teacher Information Management
Diabetes Mellitus Gastrointestinal Bleed Hospital-Acquired Pneumonia Pain Management Perioperative Medicine Sepsis Syndrome Stroke Urinary Tract Infection Venous Thromboembolism		Leadership Management Practices Nutrition and the Hospitalized Patient Palliative Care Patient Education Patient Handoff Patient Safety Practice-Based Learning and Improvement Prevention of Healthcare-Associated Infections and
		Prevention of Healthcare–Associated Infections and Antimicrobial Resistance Professionalism and Medical Ethics Quality Improvement Risk Management Team Approach and Multidisciplinary Care Transitions of Care

*Clinical chapter list is not a complete compilation of all inpatient clinical conditions that hospitalists may find in an inpatient setting.

and for which they can have an effect on systems and processes of care. These clinical chapters form a foundation of topics for which hospitalists have already begun quality and efficiency initiatives.

The task force further decided that symptom evaluation and management could be consolidated into a systems chapter dedicated to diagnostic decision making. A reasonably large constellation of symptoms, including but not limited to chest pain, shortness of breath, syncope, and altered mental status, are encountered by hospitalists daily. Although evaluation and management of these symptoms are extremely important parts of triage, subsequent testing, and hospital care, the ability to develop a differential diagnosis and proceed with the indicated testing and its interpretation is common to all symptom evaluation. Such evaluation and diagnostic decision making are therefore summarized in a single chapter in the Healthcare Systems section, and no symptom chapters are found in the Clinical section.

Procedures Section

The initial topic lists for the Procedures and Systems sections were developed through input from

the broad representation of the Core Curriculum Task Force. The chapters in the Procedures section contain competencies expected for the inpatient procedures that hospitalists are most likely to perform or supervise in their day-to-day care of hospitalized patients. The presence of a procedural skill in the Core Competencies does not necessarily indicate that every hospitalist will perform or be proficient in that procedure. Similarly, the absence of a procedure from the Core Competencies should not exclude trained and experienced hospitalists from performing that procedure. The task force recognizes that the individual hospital setting, including local and regional variations, determines who might perform certain procedures depending on many factors, which may include whether there are trainees, specialty support including radiology, and procedure teams. The Procedures section outlines those procedures frequently performed in the everyday practice of hospital medicine and incorporates relevant competencies to afford proper performance, patient education and involvement, prevention of complications, and quality improvement for these procedures.

Healthcare Systems Section

Although many competencies delineated in the Clinical Conditions and Procedures sections of the supplement may be taught well during medical school and residency training, that is not true of the chapters and competencies in the Healthcare Systems section, many of which are not extensively taught in most undergraduate or graduate medical education programs. Therefore, many hospitalists must gain or supplant their knowledge, skills, and attitudes in system areas posttraining.

The Healthcare Systems section delineates themes integral to the successful practice of hospital medicine in diverse hospital settings. Many chapters in this section focus on processes and systems of care that typically span multiple disease entities and frequently require multidisciplinary input to create a coordinated effort for care quality and efficiency. The chapters and core competencies in the Healthcare Systems section direct hospitalists to lead and innovate in their own hospital practices and to convey the principles of evidencebased inpatient medical care and systems-based practice to medical students, physicians-in-training, other medical staff, colleagues, and patients. The task force expects that many new hospitalists will still be learning many of the competencies in the Healthcare Systems section during the early stages of their posttraining practice. However, as training of hospitalists during undergraduate and graduate medical education further evolves, we expect that more hospitalists will enter the workforce with more of the skills necessary to prepare them for their careers.

Some Healthcare Systems chapters have clinical themes but were included in this section because it is believed that the clinical approach always spans multiple clinical entities and always requires an organizational approach crossing several disciplines in medicine in order to optimize the hospital care. Such chapters include Care of the Elderly Patient, Prevention of Healthcare Associated Infections and Antimicrobial Resistance, Nutrition and the Hospitalized Patient, and Palliative Care. Other chapters in the Healthcare Systems section focus on educational themes that drive the practice of hospital medicine and the lifelong learning and teaching required of hospitalists. Some of these chapters include Evidence-Based Medicine, Hospitalist as Teacher, Patient Education, and Practice-Based Learning and Improvement. Still other chapters in the Healthcare Systems section identify much of the organizational approachboth from clinical practice and practice management standpoints-that must be adopted by hospitalists in order to provide high-quality care while maintaining functional and sound practice. Examples of chapters focusing on clinical practice organization include Patient Safety, Quality Improvement, Team Approach and Multidisciplinary Care, Transitions of Care, and Patient Handoffs. Although the Transitions of Care chapter focuses on the processes and communication required for the safe transition of patients from one clinical setting to another; the Patient Handoffs (or "sign-out") chapter focuses on the hospitalist-to-hospitalist communication essential when one hospitalist assumes care of a patient from another (either from dayshift to nightshift on the same service or assuming care of service from a different service). Examples of chapters focusing on practice management organization include Business Practices, Equitable Allocation of Resources, Leadership, and Risk Management. Overall, the Healthcare Systems chapters help to characterize and delineate the practice and scope of hospital medicine, especially with topics not taught in detail during most residency training programs.

Editorial Board, Content Survey, and Topic List Refinement

Once the initial topic list was created, a five-member editorial board was chosen from the CCTF membership, including the SHM CCTF chair, the Education Committee chair, two member hospitalists, and a health education specialist. The purpose of this board was to interpret survey feedback, solicit contributors to write competency chapters, review and revise the chapters submitted, and prepare the larger document for review and final publication. The Core Curriculum Task Force developed a survey to obtain feedback on the initial topic list. Face validity was established through a survey sent electronically in 2003 to the SHM Board of Directors and Education Committee, as well as to 10 representatives of each SHM regional council and local chapter. In all, more than 250 hospitalists representing diverse geographic and practice backgrounds were surveyed. Feedback from the survey was reviewed by the CCTF. The topic list was then revised with additions and modifications incorporated from survey feedback. The scope of individual topics also was modified in multiple iterations congruent with the internal and external review processes.

Contributors

Contributors were solicited by the task force, utilizing SHM databases-believed to be the most comprehensive registry of hospitalist physicians-and an electronic call for nominations to practicing hospitalists from around the United States. Other recognized content experts were solicited independently on the basis of chapter or content needs. Efforts were taken to identify hospitalists with expertise in specific topic areas, particularly those with a history of presentations or publications on individual chapter subject matter. Potential contributors submitted credentials, including curricula vitae and other supporting documents or information, when requesting to write a specific chapter for the Core Competencies compendium. Contributors were competitively selected on the basis of their submitted information compared to those of others requesting to write the same chapter. In some cases practicing hospitalists were paired with nonhospitalist expert contributors to create a chapter. Contributors were provided with guidelines with which to prepare their chapter.

Review and Revision

The editorial board reviewed all the chapters, rigorously evaluating each chapter through at least five stages of review and revision. First, chapters were reviewed by the editorial board—initially by at least two physician members and then by the entire editorial board. Chapters were reviewed for the scope and completeness of concepts, adherence to educational theory, and consistency in chapter format. Changes in content and for consistency were extensive in some chapters, whereas others required only small or moderate changes. Significant editing was required to create chapters as a compilation of specific, measurable competencies as opposed to topic-related content. All chapters required some level of modification to assist with consistency in style, language, and overall goals. Where appropriate, individual chapters were also reviewed by relevant SHM committees, task forces, or content experts, and initial feedback was provided. For example, the Leadership chapter was reviewed by the SHM Leadership Task Force. Other SHM committees and task forces involved in chapter reviews included the Education, Healthcare Quality and Patient Safety, and Ethics committees as well as the Geriatric Task Force. Changes recommended changes on the basis of committee and task force feedback were incorporated into the relevant chapters.

Second, revisions of individual chapters from the editorial board were sent back to contributors for final comment, revision, and approval. Third, the compilation of all chapters and sections was reviewed (as a whole) and underwent further revision by the editorial board based on feedback from the contributors and the relevant SHM committees. Fourth, the entire revised supplement was sent for an internal review by the SHM board and relevant SHM committees or committee representatives.

Fifth, final reviews were solicited from external reviewers of medical professional organizations and academic organizations. Feedback from the internal and external reviews were compiled and systematically evaluated by the CCTF editorial board. Recommended changes were incorporated into individual chapters or throughout the Core Competencies compendium on the basis of the evaluation and consensus approval of the editorial board. For example, one reviewer believed that quality improvement initiatives were necessary for all procedures that hospitalists perform in order to help reduce the risk of complications. Therefore, each procedure chapter was revised to reflect this competency. Similarly, another reviewer thought that in many chapters the involvement of nursing and other medical staff in the implementation of multidisciplinary teams was underemphasized. Therefore, efforts were taken to improve the emphasis of these key participants in multidisciplinary hospital care.

The efforts of many individuals and professional organizations have helped the CCTF to refine the expectations of a professional trained in the discipline of hospital medicine. Table 2 has a complete listing of those solicited to be internal and external reviewers. Although aggressive efforts were undertaken to encourage feedback from all solicited reviewers of the Core Competencies document, time or other constraints prevented some reviewers from responding to the review request (overall response or review rate: 52%). Nevertheless, the multiple review and revision process brought what was initially disparate content and organization together in a much more cohesive and consistent

TABLE 2Solicited Internal and External Reviewers*

- Accreditation Council of Graduate Medical Education (ACGME)
- Agency for Healthcare Research & Quality (AHRQ)
- American Academy of Family Practice (AAFP)
- American Association of Critical Care Nurses (AACCN)
- American Association of Subspecialty Professors
- American Board of Family Practice
- American Board of Internal Medicine (ABIM)
- American College of Chest Physicians (ACCP)
- American College of Emergency Physicians (ACEP)
- American College of Physicians (ACP)
- American Geriatrics Society
- American Hospital Association (AHA)
- Association of American Medical Colleges (AAMC)
- Institute for Healthcare Improvement (IHI)
- John A. Hartford Foundation
- Joint Commission on Accreditation of Healthcare Organizations (JCAHO)
- Residency Review Committee Internal Medicine (RRC-IM)
- Reynolds Foundation
- Robert Wood Johnson Foundation (RWJF)
- Society of Critical Care Medicine (SCCM)
- Society of General Internal Medicine (SGIM)
- Society of Hospital Medicine
- Board of Directors (9 members solicited)
- CCTF Members (3 members solicited exclusive of editorial board)

*Response rate: 52%

approach and structure to competencies in hospital medicine.

CHAPTER CONTENT DESCRIPTION

As previously delineated, the Core Competencies document has three sections: Clinical Conditions, Procedures, and Healthcare Systems. The chapters in the entire compendium and within each section have been designed to stand alone and to be used either individually or collectively to assist with curriculum development in hospital medicine. However, each chapter should be used in the context of the entire document because a particular issue may only be touched on in one chapter but may be more elaborately detailed in another. For example, all clinical conditions chapters include a competency on the issue of care transitions, but the specific competencies for care transitions are presented in a separate Transitions of Care chapter.

All chapters in each section begin with an introduction that provides brief background information and establishes the relevance of the topic to practicing hospitalists. Each chapter then utilizes the educational theory of learning domains. The learning domains include the cognitive domain (knowledge), the psychomotor domain (skills), and the affective domain (attitudes). The companion article "How to Use *The Core Competencies in Hospital Medicine: A Framework for Curriculum Development*"¹³ describes in detail the educational theory guiding the development of the Core Competencies document and suggested methods for applying it to the development and revision of curricula and other training activities.

The task force further decided that each chapter in the Clinical Conditions and Procedures sections should include a subsection dedicated to system organization and improvement, an added domain that requires integration of knowledge, skills, and attitudes and the involvement of other medical services and disciplines for optimal patient care. The editorial board believed that system organization and improvement was already an intrinsic feature embedded in the chapters of the Healthcare Systems section. Therefore, this subsection was not included in those chapters.

Hospitalists subscribe to a systems organizational approach to clinical management and processes of care within the hospital. This systems approach, more than any level of knowledge or skill, is required to effectively and efficiently practice in the hospital setting. Practicing with a systems approach, with the interest of improving processes of care, is embedded throughout the Core Competencies document and is a practice method that all hospitalists may strive to achieve as they develop and improve their inpatient care. The competencies within the Systems Organization and Improvement section may contain a range of competency expectation (eg, lead, coordinate, or participate in...) to acknowledge their uniqueness and variation according to practice settings and locally instituted responsibilities.

Each competency within a chapter details a level of proficiency, providing guidance on learning activities and potential evaluation strategies. Several overarching themes are followed in the chapters that help to define hospitalists as physicians who specialize in the care of hospitalized patients. First, hospitalists strive to support and adhere to a multidisciplinary approach for the patients under their care. Such an approach involves active interaction with and integration of other hospital medical staff (eg, nursing, rehabilitation therapies, social services) and of specialty medical or surgical services when indicated. Recognizing that hospitalists vary in experience and mastery of their field, the task force and editorial board believed that, at minimum, hospitalists would participate in multidisciplinary teams for improvement of the care and process related to the clinical conditions within their organization. However, they might also lead and/or coordinate teams in such efforts. Therefore, most chapters contain competencies that expect hospitalists to "lead, coordinate, or participate..." in multidisciplinary teams or initiatives that will facilitate optimal care within their organization.

Second, because hospital medicine centers around the quality of inpatient care, participation in quality improvement (QI) initiatives, focusing on improving processes or systems of care in a local institution or organization, may be common in hospitalist practices. The level of involvement and role in QI initiatives may vary according to the particular system, the resources available, and a hospitalist's experience. Finally, because hospitalist care intrinsically involves an increase in the number of care transitions and handoffs, hospitalists need to remain sensitive to and focused on the care transitions that occur with their patients. Such transitions may occur as patients enter the hospital, move from one location to another within the hospital, or leave the hospital. This vulnerable time for patients requires hospitalists to be vigilant in their communication efforts—with patients, with medical staff, and with outpatient clinicians.

Each competency was crafted to indicate the relevant concept, the level of proficiency expected, and a way to evaluate mastery. The teaching processes and learning experiences that must take place to achieve competency are left for curriculum developers and instructors to design. These core competencies represent an initial step in curriculum development, creating an identity and core set of expectations for hospitalists that we believe will lead to progress and maturity within the field.

SUMMARY AND FUTURE DIRECTIONS

The practice of hospital medicine requires proficiency of interrelated aspects of practice—clinical, procedural, and system-based competencies. For practicing hospitalists, the Core Competencies document may serve as a resource to refine skills and assist in program development at individual institutions, both regionally and nationally. For residency program directors and clerkship directors, the Core Competencies document can function as a guide for developing the curriculum of inpatient medicine rotations or for meeting the requirements of the Outcomes Project of the Accreditation Council on Graduate Medical Education's. Last, for those developing continuing medical education programs, the Core Competencies document or individual chapters or topics within it may serve as an outline around which specific or broad-based programs can be developed. Although the development of such curricula and the recipients of them should be evaluated, the actual evaluation is left to the curriculum developers.

Hospitalists are invested in making hospitals run better. They are positioned to take leadership roles in addressing quality, efficiency, and cost interests in both community and academic hospital settings. Their goals include improving care processes, hospital work life, and the setting in which they practice. The key core competencies described in this compendium define hospitalists as agents of change 1) to develop and implement systems to enable best practices to occur from admission through discharge, and 2) to promote the development of a safer culture within the hospital.

Hospital medicine remains an evolving specialty. Although great care was taken to construct these competencies so they would retain their relevance over time, SHM, the Core Curriculum Task Force, and the editorial board recognize the need for their continual reevaluation and modification in the context of advances and changes in the practice of hospital medicine. Our intent is that these competencies be a common reference and foundation for the creation of hospital medicine curricula and serve to standardize and improve training practices.

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