Health Professions Education

Competencies for Patient Safety and Quality Improvement: A Synthesis of Recommendations in Influential Position Papers

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National attention in the United States to problems in health care has stimulated formulation of recommendations for reform to improve the quality and safety of patient care.\(^1,2\) A number of reports, such as the Institute of Medicine’s (IOM) *Crossing the Quality Chasm: A New Health System for the 21st Century*,\(^2\) have proposed changes in health care systems to address these problems. System failures are now recognized as a major contributor to problems in health care.\(^1,3–5\) The IOM report *Health Professions Education: A Bridge to Quality*,\(^6\) however, argues that implementation of safer health care systems is not sufficient to improve and sustain the quality of health care, and the IOM and others argue that health care professionals should prioritize quality and safety as important in their practice and be capable of performing effectively within evolving health care systems.\(^2,6–7\) “The development of such professionals requires integration of patient safety and quality improvement (QI) in curricula and assessment of competency in these domains.”\(^6\) A frequently cited definition of competency is “an observable ability of a health professional, integrating multiple components such as knowledge, skills, values, and attitudes.”\(^8(p. 641)\)

Many national and international professional associations, expert panels, consortia, centers and institutes, and convened committees (hereinafter referred to as professional organizations) have published or sponsored position papers with recommendations for competencies essential for health care professionals to provide high-quality, effective, and safe patient care. These competencies may serve as the basis for design of curriculum intended to educate health professionals who will demonstrate the knowledge, skills, and attitudes (KSA) required to provide effective and safe patient care.\(^3\) There are, however, barriers to successful instruction and assessment of these competencies; for example, educators may find it difficult to navigate the large number of published recommendations. There is no common understanding, among the published competencies, of the KSA by stage of skill acquisition, essential for all health professionals. Educators may develop their curriculum on the basis of their own conceptions of (1) what are the essential KSA for patient safety and QI; and (2) their students’ required stage of skill acquisition.

Article-at-a-Glance

**Background:** There is limited conformity among patient safety and quality improvement (QI) competencies of the knowledge, skills, and attitudes (KSA), by stage of skill acquisition, essential for all health professionals. A study was conducted to identify, categorize, critically appraise, and discuss implications of competency recommendations published in influential position papers.

**Methods:** A literature search was conducted of competency recommendations in position papers published by national and international professional associations, expert panels, consortia, centers and institutes, and convened committees, in the domain of patient safety and QI. To be included in the analysis, the competency had to be recommended in at least 20% (rounded) of the position papers. Qualitative content analysis was used to identify themes among the published competencies for the skill acquisition levels of competent and expert, using Dreyfus’s definitions.

**Results:** On the basis of the 22 papers that met the inclusion criteria, 17 themes were identified among the 59 competencies for the skill level competent. Among the 23 competencies for the skill level expert, 13 themes were identified. Competencies within the theme “Evidence-Based Practice” were most frequently recommended across both skill levels. The themes “Interdisciplinary Teamwork and Collaboration” and “Evidence-Based Practice” were the themes identified among the greatest number of position papers for the skill level competent and expert, respectively.

**Conclusions:** The identified themes for competencies in patient safety and QI have implications for curriculum development and assessment of competence in education and practice. The findings in this study demonstrate a need to discourage publication of recommendations of yet more competencies and to instead encourage development of an international consensus on the essential KSA for patient safety and QI across all health professions and all levels of skill acquisition.
acquisition (for example, health professionals entering practice compared to those having advanced responsibilities for patient safety and QI activities). Identifying those most frequently cited competencies among current published recommendations may inform the design and development of education programs. The literature lacks a comparison of competencies across position papers to identify the most frequently recommended competencies and to assess the consistency of competency recommendations across papers, and there is no known national or international agreement as to the essential competencies across all stages of skill acquisition, across all the health professions.

Since 2007, the University of Illinois at Chicago, College of Medicine, first through the Institute for Patient Safety Excellence and now through its Department of Medical Education, has offered graduate programs in patient safety leadership. In the process of curriculum renewal, we conducted a review of recommendations published in influential position papers sponsored by major professional organizations to identify essential competencies recommended for patient safety and QI on the basis of their frequency of citation.

In this article, we report the results of this analysis, with themes synthesized from the recommended competencies across the position papers, and provide a critical appraisal of the coherence among the reported competencies. This synthesis of recommendations, along with the critical appraisal of competencies recommended by major professional organizations, provides an integrated source for curriculum development, identifies gaps in current published recommendations, and suggests implications for further deliberation to develop comprehensive standards for competence in the field of patient safety and QI.

Methods
DEFINITIONS
The following definitions guided this study:

- **Patient safety:** “The prevention and mitigation of harm caused by errors of omission or commission that are associated with healthcare, and involving the establishment of operational systems and processes that minimize the likelihood of errors and maximize the likelihood of intercepting them when they occur.”

- **Quality improvement:** “refers to a continuous and ongoing effort to achieve measurable improvements in the efficiency, effectiveness, performance, accountability, outcomes, and other indicators of quality services or processes which achieve equity and improve the health of the community.”

- **Competency:** “An observable ability of a health professional, integrating multiple components such as knowledge, skills, values, and attitudes. Since competencies are observable, they can be measured and assessed to ensure their acquisition. Competencies can be assembled like building blocks to facilitate progressive development.”

- **Competence:** “The array of abilities [KSA] across multiple domains or aspects of . . . performance in a certain context. Statements about competence require descriptive qualifiers to define the relevant abilities, context, and stage of training. Competence is multi-dimensional and dynamic. It changes with time, experience, and setting.”

SAMPLE OF THE LITERATURE
We conducted a thorough, purposeful sampling of the literature to identify influential position papers recommending competencies for patient safety and QI that were published or sponsored by major professional organizations. Our purpose was not to recommend new competencies but to identify recommendations of competencies for categorization and comparison across all health care disciplines. For the purpose of this review, we define an “influential position paper” as one recommending competencies grounded in evidence or expert opinion which has the potential to influence curricula. Working groups within major professional organizations should, and do, influence patient safety and QI competence standards through the publication of these influential position papers.

Competency recommendations should differ on the basis of the skill level and professional roles of the learner. As a result, we chose to organize competencies in two separate categories on the basis of the Dreyfus model of skill acquisition—competent and expert. We defined the competencies for the skill acquisition level competent as the KSA that should be expected of all health care professionals entering practice. Some professionals, by the nature of their responsibilities or interests (for example, leaders), may require expert competencies, such as the skill to change and implement policies, procedures, and processes for patient safety and QI that reflect evidence. Maintaining this distinction and identifying the competencies in each skill level are important for curriculum design, instruction and assessment, and evaluation of health professionals within the workplace.

SEARCH STRATEGIES
We used two simultaneous approaches to acquiring our data in the initial search:

1. We identified major professional organizations with known interests in patient safety and QI and, guided by two internal subject matter experts in patient safety/QI and in medical education [I.B.H., A.L.V.], searched organizational websites for
posted position papers.
2. We performed a database search of PubMed, using the search terms (“patient safety” or “quality improvement”) and (“education” or “health professional education” or “leadership”) and (“competency” or “core competencies”). The searches were limited to English-language publications.

**Inclusion Criteria**

To be eligible for inclusion in the review, a position paper was required to meet the following criteria:

1. The position paper had to contain evidence- or expert opinion-based competency recommendations for “patient safety” or for “patient safety and quality improvement.”
2. The position paper had to be sponsored or published by a major professional organization, defined as (i) a national association for health professions education; (ii) an accrediting organization; or (iii) a national or international organization, expert panel, consortium, or centers and institutes with a focus on patient safety and QI.
3. The sponsoring organization had to represent a major health care discipline, such as medicine, nursing, or pharmacy, or be an interdisciplinary organization representing multiple disciplines.

**Exclusion Criteria**

Excluded from this review were the following:

1. Papers whose sole focus was evidence- or expert opinion-based competency recommendations for “quality improvement”
2. Papers sponsored by subspecialty organizations; we sought to identify only competencies for the broadest population of health care professionals, which are recommended for primary or multiple professions.
3. Papers only describing methods or outcomes of implementing patient safety and QI competency recommendations in curricula; our aim was to identify and perform an appraisal of the competencies, not their application in programs.
4. Papers published before 1998; the period following that year was marked by significant maturation in the field—for example, in June 1998, the IOM established the Committee on the Quality of Health Care in America. This committee subsequently released two landmark reports on health care quality and safety: *To Err Is Human: Building a Safer Health System* and *Crossing the Quality Chasm: A New Health System for the 21st Century*. In addition, important papers were published and initiatives established in 1998, such as the Pew Health Professions Commission’s fourth report, the Institute for Healthcare Improvement’s (IHI) Knowledge Domains, and the Association of American Medical Colleges (AAMC) Medical Schools Objectives Project.

**Selection of Position Papers**

In August 2013–December 2013 and again in August 2015–September 2015, the first author [K.M.M.] performed the searches and reviewed the titles and abstracts of all publications retrieved from PubMed and the websites of major professional organizations. She performed backward reference searches on the basis of the reference lists of position papers and journal articles to locate publications not already identified. The review of organizational websites, PubMed, and reference lists yielded 497 articles. After removal of duplicates, 380 articles were eliminated from the review because of their lack of relationship to patient safety or QI competencies (inclusion criteria 1).

The remaining 117 articles were reviewed by the second [I.B.H.] and third [A.L.V.] authors. Using the exclusion criteria, the authors excluded (1) those that did not recommend a comprehensive set of competencies but only described a curriculum application of competencies (84 in total, 33 remaining); and (2) those that did not meet other inclusion criteria or were sponsored by a subspecialty organization or were published before 1998 (11 in total, 22 remaining). The final set of 22 full-text position papers or journal articles was determined by group consensus among all three authors. Each of these 22 publications described a rigorous methodology for formulation of the competencies, and the methods often included a literature review to establish baseline evidence, followed by expert deliberations. Sidebar 1 (page 165) lists the 15 major professional organizations that either published or sponsored the 22 position papers selected for final inclusion in this review.

**Data Abstraction, Categorization, and Synthesis**

We used the qualitative method of triangulation and saturation to identify and categorize competencies among those reported in the 22 publications. We used the stages of competent and expert as filters to identify which competencies to report. We continually reflected on the Dreyfus definitions as we reviewed the position papers.

The first author extracted and separated the competency recommendations—our “data”—into the two Dreyfus categories, competent and expert, and the third author reviewed this extraction. For each category, the first author then analyzed its content, grouped together similar concepts or competency statements, and proposed themes. The second and third authors reviewed the themes and their associated competencies, and through the process of content analysis, deliberation, and
Competencies within the theme “Evidence-Based Practice” were most frequently recommended across both skill levels. For the skill level competent, the concept “Interdisciplinary Teamwork and Collaboration” was the theme identified in the greatest number of position papers, with “Patient-Centered Focus” the next most frequent theme. The themes emerging at the competent level and not at the expert level were “Coordination and Transitions of Care,” “Effective Communication Skills,” “Ethics and Legal Issues,” “Patient-Centered Focus,” “Personal and Professional Accountability for Quality,” “Quality and Safety Best Practices,” “Quality and Safety Principles,” and “Risk Management.”

For the skill level expert, the concept “Evidence-Based Practice” was the theme that was identified in the greatest number of position papers, with “Utilization and Improvement of Health Information Technology” the next most frequent theme. The themes identified at the expert level and not at the competent level were “Creating a Culture of Safety,” “Implementing and Sustaining Quality Initiatives,” “Motivating and Strategizing for Change,” and “Staff Support.”

Recommendations for specific competencies made by the international organizations typically were written to include specific learning objectives and behavioral anchors describing milestones for achievement of objectives, whereas recommendations for competencies made by organizations in the United States were written in more general terms. Recommendations for specific competencies were consistent among the health professions disciplines.

Discussion
The field of study focused on patient safety and QI is growing, from the perspectives of academic education, training in practice settings, and scholarship. The current primary approach for recognition of qualifications are the well-recognized credentials, earned through certification exams. These credentials will continue to be important, as they demonstrate competence, defined by the credential, and demonstrate continuing education and advancement in the field over time. Advances in the breadth and depth of organized disciplinary knowledge, in research and scholarship, however, require formal academic preparation, typically based in graduate programs.

The purpose of this review was to aggregate the core competencies agreed on for the field of patient safety and QI, in influential position papers, with the goal of reviewing the current curriculum of the Master of Science in Patient Safety Leadership in the Department of Medical Education at the University of Illinois at Chicago. Unexpectedly, this review revealed a low consensus, refined and approved the themes, with every competency concept included in a theme.19

Analysis of Data
The number of times a similar competency recommendation appeared across position papers suggests a level of agreement about its importance among subject matter experts. Balancing inclusivity and exclusivity, we selected a threshold value for inclusion of 20% (rounded), meaning that a competency similar in concept had to be reported by 20% (rounded) of the total number of publications in our analysis.

Results
A total of 422 competencies across all 22 publications for both the competent (197 competencies) and expert (225 competencies) skill levels were identified. Applying the threshold of the same competency being reported in 20% (rounded) of the publications, we reduced the final number of competencies from 197 to 59 for the skill level competent and from 225 to 23 for the skill level expert. Using the methodological approach of content analysis, we identified 17 themes among the 59 competencies for the skill level competent; Sidebar 2 (page 166) presents these competencies’ themes and general concepts. For the skill level expert, we identified 13 themes among the 23 competencies (Sidebar 3, page 167).
level of national and international agreement as to what are the core competencies in this field. We identified similar recommendations of competencies in 20% (rounded) of the influential papers published or sponsored by working groups within major professional organizations. Had we chosen a higher level of agreement, the number of competencies identified as core competencies would have markedly decreased.

This thematic review of the competencies formulated in influential position papers reveals the areas of agreement and the differences in perspective about the KSA needed for patient safety practice for all health professionals considered competent or expert in the field of patient safety and QI. In this regard, we found little evidence of national or international agreement.

Furthermore, our review led us to find several problems, as we now describe, in formulating essential competencies for this field. These problems suggest the need for further national and international deliberation to build consensus about the essential competencies for the field of patient safety and QI.

**Problems in Formulating Essential Competencies**

**Inconsistent Recommendations.** No one competency was found consistently in recommendations among the papers reviewed. We must consider the implications of these variations for curriculum design and professional practice. These variations reflect the state of a field that is still maturing. To reach full maturation, it is necessary to develop an international consensus about the KSA essential for health professions education and the systems characteristics required for effective professional practice.

**Level of Detail in Recommendations.** There were variations
in the depth and breadth of the discussions of the KSA comprising competencies. A number of position papers describe competencies in great detail, while others make recommendations in more general terms. When competencies are stated in overly general terms, education program directors have insufficient guidance for curriculum and instructional design to assist students in achieving those competencies; too much detail, on the other hand, may result in rigidity in application. Clearly stated competencies are needed to guide educational program design, implementation, and evaluation.

**Stages of Competence.** There is little focus on competencies for experts among the position papers, as evidenced by only 23 such competencies being reported in 20% of the position papers, including, for example, those of the National Patient Safety Foundation4 and the IHI.3,14 Little discussion in these 22 papers is focused on clear definitions of the levels of skill acquisition, from novice to expert, for each competency. As professionals advance in their education and practice, expectations of competence should be consistent with increasing levels of knowledge, experience, and responsibility. There are significant differences between the level of knowledge and skills required from novice to expert. There needs, therefore, to be consensus for expectations of competencies across all stages of the continuum of professional development. Among the position papers reviewed, not all offer recommendations in a format defining stages of competence. The AAMC’s recent publication, *Teaching for Quality: Integrating Quality Improvement and Patient Safety Across the Continuum of Medical Education*,9 distinguishes competencies at three levels: proficient, expert, and master. The position paper published by the Australian Council for Safety and Quality in Health Care20 separates recommended competencies into four stages, starting at foundational competencies and building to organizational competencies. This framework, which appears to be easy to understand and apply across education programs, provides assurance that students have achieved basic competencies before advancing to the next stage of training.

**Implications**

An increase in the number of position papers published, and the number of competencies recommended, are evidence of growth of the field of patient safety and QI during the past 15 years. We used our analysis of competencies for patient safety and QI, recommended by major professional organizations, to produce a thematic list of competencies for health professionals. These organizations developed their recommendations through extensive deliberative processes, to capture expert judgment. There is a clear need for national and international consensus building for competencies in the field of patient safety and QI.
across the levels of skill acquisition. The themes of competencies identified in this review can serve as a starting point for such consensus building. Within existing education programs at academic and health care institutions, these identified themes can inform the process of curriculum needs assessment. These recurring recommendations do suggest some core competencies that program directors may find useful in conducting their general and targeted needs assessments for patient safety and QI curriculum development and renewal.21

Many of the themes that we identified such as “Quality and Safety Best Practices/Principles” were to be expected and are easily recognized as fundamental for patient safety and QI education. In more recent recommendations in position papers, health care organizations are also responding to other quality-of-care deficiencies identified in the 1999 IOM report,1 including the importance of knowledge about health information technology and interdisciplinary teamwork. It is not surprising to see an emphasis in the position papers on, for example, skills in patient-centered care and coordination of care. These themes are well represented in the literature, independent of discussions of patient safety and QI. Interdisciplinary teamwork became an important focus of health professions education and practice in the 1970s, following the IOM conference “Interrelationships of Educational Programs for Health Professionals.”22 More recent interprofessional education recommendations have been published by influential groups such as the Interprofessional Education Collaborative (IPEC).23

Most recognized health care disciplines today (for example, medicine, nursing, pharmacy, dentistry) have come to consensus, through their professional associations and their education and accreditation groups, on a set of competencies for the profession; many have defined competencies as well as levels of skills acquisition. Although there is some consistency among recommended competencies, the variations that we identified in recommendations among position papers, for competencies in patient safety and QI, serve as a call for deliberation to reach national and international consensus about educational standards, consistent in content and detail across health professions. The lack of consensus identified in this study, which is particularly lacking with respect to the KSA, including change management, curriculum building, and senior management skills for leaders, demonstrates a need to discourage publication of recommendations for yet more competencies and to instead place priority on the need to arrive at consensus on the essential KSA for practice in this field.

**Limitations**

This paper was not intended to be a systematic review of the literature. Many papers have been published on the subject of patient safety and QI education. Although our search uncovered a large number of important position papers, there remains a small risk that some important papers were not identified, given our methods of review. Our inclusion and exclusion criteria were relatively strict. Another limitation was the exclusion of standards documents, the gray literature, or papers published by subspecialty organizations. We recognize that, as a result, some specialized perspectives may be omitted; however, our goal was to identify a comprehensive list of competency recommendations, not a targeted or discipline-specific list. Similarly, the choice of a frequency criterion of 20% (rounded) of agreement across position papers, which was intended to balance inclusivity and exclusivity, may also have excluded competencies of potential interest for many audiences.

**Conclusions**

This review of competency recommendations in position papers published by national and international professional associations suggests implications for further deliberation and national and international consensus to develop comprehensive standards for competence in patient safety and QI.7

The authors presented preliminary results regarding the core competencies in a poster, Competencies for Patient Safety and Quality Improvement: Recommendations in Influential Position Papers and Implications for Curriculum, Association of American Medical Colleges Annual Meeting, Philadelphia, November 1–6, 2013.

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