

Curricular Thread Report: Patient Safety/Quality Improvement

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Key reference: Walton M, Woodward H, Van Staalduinen S, et al. The WHO patient safety curriculum guide for medical schools. *Qual Saf Health Care*. 2010;19(6):542-546. doi:10.1136/qshc.2009.036970.

Thread Objectives

Mapped to corresponding QCOM Institutional Educational Objectives (noted in parentheses)

http://www.etsu.edu/com/msec/documents/institutionaleducationalobjectives_latestversion.pdf

Mapped to USMLE Content Outline (April 2015) Patient Safety and Quality Improvement items (noted in brackets)

(See Appendix III for numbered highest level terms for these items from USMLE Content Online)

Topic 1: What is patient safety?

A.1. Understand the discipline of patient safety and its role in minimizing the incidence and impact of adverse events and maximizing recovery from them (1.3, 7.4) [III.A]

Topic 2: What is human factors and why is it important to patient safety?

A.1. Understand human factors and its relationship to patient safety (6.1, 6.2, 6.3, 6.4, 6.5) [III.C]

Topic 3: Understanding systems and the impact of complexity on patient care

A.1. Understand how systems thinking can improve health care and minimize patient adverse events (6.1, 6.2, 6.3, 6.4, 6.5) [I.A, I.B, I.C, III.C]

Topic 4: Being an effective team player

A.1. Understand the importance of teamwork in health care (4.2, 4.3, 7.1, 7.2, 7.3, 7.4) [I.C, III.C]

A.2. Know how to be an effective team player (4.2, 4.3, 7.1, 7.2, 7.3, 7.4) [I.C, III.C]

A.3. Recognize you will be a member of a number of health-care teams as medical students (4.2, 4.3, 7.1, 7.2, 7.3, 7.4) [I.C, III.C]

Topic 5: Understanding and learning from errors

A.1. Understand the nature of error and how health care can learn from error to improve patient safety (8.1, 8.8.) [III.B]

Topic 6: Understanding and managing clinical risk

A.1. Know how to apply risk management principles by identifying, assessing, and reporting hazards and potential risks in the workplace (2.4, 6.3) [III.A]

Topic 7: Introduction to quality improvement methods

A.1. Introduce students to the principles of quality improvement and the basic methods and tools for improving the quality of health care (2.1, 3.4, 3.9) [II.A, II.B, II.C, II.D, II.E]

Topic 8: Engaging with patients and caregivers

A.1. Understand the ways in which patients and caregivers can be involved as partner in health care, both in preventing harm and in healing from an adverse event (1.7, 2.5, 3.8, 4.1, 4.2, 4.6, 4.7, 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 7.1, 7.3) [III.A]

Topic 9: Minimizing infection through improved infection control

A.1. Promote understanding of the devastating effects of inadequate infection control and educate students in the ways they can minimize the risks of contamination (2.3) [III.B]

Topic 10: Patient safety and invasive procedures

A.1. Understand the main causes of adverse events in surgical and invasive procedural care (2.3) [III.B]



A.2. Understand how the use of guidelines and verification processes can facilitate the correct patient receiving the correct procedure at the appropriate time and place (2.3) [II.A, III.A, III.C]



Topic 11: Medication safety



A.1. Provide an overview of medication safety (1.3, 1.5, 2.3) [III.B]



A.2. Encourage students to continue to learn and practice ways to improve the safety of medication use (1.3, 1.5, 2.3) [II.D]

Course-linked Objectives and Recommendations

Course-Linked Objectives	Current Course and Content	 Short Term Essential Desired	 Long Term Essential Desired
<u>Topic 1: What is patient safety?</u> A.1. Understand the discipline of patient safety and its role in minimizing the incidence and impact of adverse events and maximizing recovery from them	<u>POM:PPS</u> – IHI PS 100 module; introductory lecture (Dr. John Franko) <u>Transition to Clinical Clerkships Course</u> – key concepts in patient safety		
<u>Topic 2: What is human factors and why is it important to patient safety?</u> A.1. Understand human factors and its relationship to patient safety	<u>POM:PPS</u> – bias (Dr. Ramsey McGowen)		
<u>Topic 3: Understanding systems and the impact of complexity on patient care</u> A.1. Understand how systems thinking can improve health care and minimize patient adverse events			
<u>Topic 4: Being an effective team player</u> A.1. Understand the importance of teamwork in health care			

Course-Linked Objectives	Current Course and Content	 Short Term Essential Desired	 Long Term Essential Desired
<u>Topic 4: Being an effective team player</u> A.2. Know how to be an effective team player	<u>Transition to Clinical Clerkships Course</u> – role of the medical student in enhancing patient safety		
<u>Topic 4: Being an effective team player</u> A.3. Recognize you will be a member of a number of health-care teams as medical students			
<u>Topic 5: Understanding and learning from errors</u> A.1. Understand the nature of error and how health care can learn from error to improve patient safety			
<u>Topic 6: Understanding and managing clinical risk</u> A.1. Know how to apply risk management principles by identifying, assessing, and reporting hazards and potential risks in the workplace			
<u>Topic 7: Introduction to quality improvement methods</u> A.1. Introduce students to the principles of quality improvement and the basic	<u>M3 Rural Primary Care Clerkship</u> – quality improvement process		

Course-Linked Objectives	Current Course and Content	 Short Term Essential Desired	 Long Term Essential Desired
methods and tools for improving the quality of health care			
<u>Topic 8: Engaging with patients and caregivers</u> A.1. Understand the ways in which patients and caregivers can be involved as partner in health care, both in preventing harm and in healing from an adverse event	<u>POM:PPS</u> – apology (Dr. John Franko)		
<u>Topic 9: Minimizing infection through improved infection control</u> A.1. Promote understanding of the devastating effects of inadequate infection control and educate students in the ways they can minimize the risks of contamination	<u>Microbiology Course</u> – infectious agents associated with nosocomial infections; basic sterile technique; handwashing <u>Transition to Clinical Clerkships Course</u> – infection prevention; scrub, gown, and glove <u>M3 Surgery Clerkship</u> – sterile technique		
<u>Topic 10: Patient safety and invasive procedures</u> A.1. Understand the main causes of adverse events in surgical and invasive procedural care			
<u>Topic 10: Patient safety and invasive procedures</u>			

Course-Linked Objectives	Current Course and Content	 Short Term Essential Desired	 Long Term Essential Desired
A.2. Understand how the use of guidelines and verification processes can facilitate the correct patient receiving the correct procedure at the appropriate time and place			
<u>Topic 11: Medication safety</u> A.1. Provide an overview of medication safety	<u>Pharmacology Course</u> – drug adverse effects, contraindications, alterations in pharmacotherapy based upon patient characteristics, drug interactions, and patient education		
<u>Topic 11: Medication safety</u> A.2. Encourage students to continue to learn and practice ways to improve the safety of medication use	<u>Intro to Clinical Psychiatry</u> – medication adverse effects, contraindications, patient education, and alterations in pharmacotherapy based upon patient characteristics <u>M3 OB/GYN Clerkship</u> – estrogen use in menopause Keystone – patient safety in medical imaging (Dr. Glynda Ramsey), safe transfusion practice (Dr. Jerry Mullersman)		

*repeated recommendation

Summary:

The USMLE Content Outline from April 2015 provides a detailed listing of the concepts that medical students are expected to master in the areas of patient safety and quality improvement (see Appendix II). The topics in the USMLE Content Outline are well covered by the WHO Curriculum (see Appendix I). The coverage of these concepts by the current Quillen College of Medicine curriculum seems to be both spotty and relatively superficial. There are a couple of instances in the current curriculum where students are introduced to some aspects of patient safety, but it's unclear that these exposures to the material build upon each other very well. Exposure to the principles of quality improvement appears to be especially sparse. While patient safety and/or quality improvement are mentioned in the objectives of some clerkships (e.g., the M3 OB/GYN clerkship), it's unclear by what means the instruction in those areas is actually occurring. The greatest depth of instruction appears to be happening in the areas of medication safety and minimizing infections. However, even in these two areas, it's unclear whether appropriate emphasis is being given to the importance of system-based approaches to preventing errors and augmenting safety.

Recommendations:

1. Use the WHO curriculum and associated resources to bolster the depth and breadth of instruction in the areas encompassed by this thread.
2. Promulgate to the faculty standard definitions relevant to the areas of patient safety and quality improvement so as to ensure accurate tagging of curricular components.
3. Help the faculty to become familiar with both the WHO objectives and the USMLE Content Outline so that they can better understand what topics need to be covered.

APPENDIX I

THREAD OBJECTIVES AND ASSOCIATED OUTCOMES (FROM WHO CURRICULUM, 2009)

Topic 1: What is patient safety?

A. Learning objective: 1. Understand the discipline of patient safety and its role in minimizing the incidence and impact of adverse events and maximizing recovery from them

B. Learning outcomes:

1. Knowledge:

- a. Harm caused by health-care errors and system failures
- b. Lessons about error and system failure from other industries
- c. History of patient safety and the origins of the blame culture
- d. Difference between system failure, violations, and errors
- e. A model of patient safety

2. Performance/skills/attitudes:

- a. Apply patient safety thinking in all clinical activities
- b. Demonstrate ability to recognize the role of patient safety in safe health-care delivery

Topic 2: What is human factors and why is it important to patient safety?

A. Learning objective: 1. Understand human factors and its relationship to patient safety

B. Learning outcomes:

1. Knowledge:

- a. Be able to explain the meaning of the term "human factors"
- b. Be able to explain the relationship between human factors and patient safety

2. Performance/skills/attitudes:

1. Apply human factors thinking to your work environment

Topic 3: Understanding systems and the impact of complexity on patient care

A. Learning objective: 1. Understand how systems thinking can improve health care and minimize patient adverse events

B. Learning outcomes:

1. Knowledge:

- a. Be able to explain what is meant by the terms "system" and "complex system" as they relate to health care
- b. Be able to explain why a systems approach to patient safety is superior to the traditional approach

2. Performance/skills/attitudes:

- a. Be able to describe the term HRO and the elements of a safe health-care delivery system

Topic 4: Effective team player

A. Learning objectives:

1. Understand the importance of teamwork in health care
2. Know how to be an effective team player
3. Recognize you will be a member of a number of health-care teams as medical students

B. Learning outcomes:

1. Knowledge:

- a. Have a general understanding of the different types of teams in health care
- b. Have a general understanding of the characteristics of effective teams
- c. Have a general understanding of the role of the patient in the team

2. Performance/skills/attitudes:

- a. Be mindful of how one's values and assumptions affect interactions with others
- b. Be mindful of the team members and how psychological factors affect team interactions
- c. Be aware of the impact of change on teams
- d. Be ready to include the patient in the team
- e. Use appropriate communication techniques
- f. Resolve conflicts effectively
- g. Use mutual support techniques
- h. Change and observe behaviors

Topic 5: Understanding and learning from errors

A. Learning objective: 1. Understand the nature of error and how health care can learn from error to improve patient safety

B. Learning outcomes:

1. Knowledge:

a. Be able to explain the terms error, violation, near miss, hindsight bias

2. Performance/skills/attitudes:

a. Know the ways to learn from errors

b. Participate in an analysis of an adverse event

c. Practice strategies to reduce errors.

Topic 6: Understanding and managing clinical risk

A. Learning objective: 1. Know how to apply risk management principles by identifying, assessing, and reporting hazards and potential risks in the workplace

B. Learning outcomes:

1. Knowledge:

a. Know the activities necessary for gathering information about risk

b. Understand fitness-to-practice requirements

c. Comprehend the need for personal accountability for managing clinical risk

2. Performance/skills/attitudes:

a. Know how to report know risks or hazards in the workplace

b. Be able to keep accurate and complete medical records

c. Know when and how to ask for help from a supervisor, senior clinician, and other health-care professionals

d. Participate in meetings that discuss risk management and patient safety

e. Be able to respond appropriately to patients and families after an adverse event

f. Be able to respond appropriately to complaints

Topic 7: Introduction to quality improvement methods

A. Learning objectives: 1. Introduce students to the principles of quality improvement and the basic methods and tools for improving the quality of health care

B. Learning outcomes:

1. Knowledge:

- a. The science of improvement
- b. The quality improvement model
- c. Change concepts
- d. At least two examples of continuous improvement methods
- e. Methods for providing information on clinical care

2. Performance/skills/attitudes:

- a. Be able to perform a range of improvement activities and tools

Topic 8: Engaging with patients and caregivers

A. Learning objective: 1. Understand the ways in which patients and caregivers can be involved as partner in health care, both in preventing harm and in healing from an adverse event

B. Learning outcomes:

1. Knowledge:

- a. Basic communication techniques
- b. Informed consent procedures
- c. Basics of open disclosure

2. Performance/skills/attitudes:

- a. Be able to encourage patients and caregivers to share information
- b. Be able to show empathy, honesty, and respect for patients and caregivers
- c. Be able to communicate effectively
- d. Obtain informed consent
- e. Show respect for each patient's differences, religious and cultural beliefs, and individual needs
- f. Be able to describe and understand the basic steps in an open disclosure process
- g. Apply patient engagement thinking in all clinical activities
- h. Able to recognize the place of patient and caregiver engagement in good clinical management

Topic 9: Minimizing infection through improved infection control

A. Learning objective: 1. Promote understanding of the devastating effects of inadequate infection control and educate students in the ways they can minimize the risks of contamination

B. Learning outcomes:

1. Knowledge:

- a. Understand the scope of infection control problems
- b. Know the main causes and types of infections addressable via infection control methods

2. Performance/skills/attitudes:

- a. Apply universal precautions
- b. Be immunized against hepatitis B
- c. Be able to use personal protection methods effectively
- d. Be prepared to take appropriate action if exposed
- e. Encourage others to use universal precautions

Topic 10: Patient safety and invasive procedures

A. Learning objectives:

- 1. Understand the main causes of adverse events in surgical and invasive procedural care
- 2. Understand how the use of guidelines and verification processes can facilitate the correct patient receiving the correct procedure at the appropriate time and place

B. Learning outcomes:

1. Knowledge:

- a. Know the main types of adverse events associated with surgical and invasive procedures care
- b. Know the verification processes for improving surgical and invasive procedures care

2. Performance/skills/attitudes:

- a. Follow a verification process to eliminate wrong patient, wrong side, and wrong procedure
- b. Practice operating room techniques that reduce risks and errors (time-out, briefings, debriefings, stating concerns)
- c. Participate in an educational process for reviewing surgical and invasive procedures' mortality and morbidity

Topic 11: Medication safety

A. Learning objectives:

1. Provide an overview of medication safety
2. Encourage students to continue to learn and practice ways to improve the safety of medication use

B. Learning outcomes:

Knowledge:

- a. Understand the scale of medication errors
- b. Understand that using medications has associated risks
- c. Understand common sources of errors
- d. Understand where in the process errors can occur
- e. Understand a doctor's responsibilities when prescribing and administering medication
- f. Be able to recognize hazardous situations
- g. Know ways to make medication use safer
- h. Understand the benefits of a multidisciplinary approach to medication safety

Performance/skills/attitudes:

- a. Be able to use generic names
- b. Be able to tailor prescribing for each patient
- c. Be able to practice thorough medication history taking
- d. Know the high-risk medications
- e. Be very familiar with the medications you prescribe
- f. Use memory aids to support safe use of medications
- g. Communicate medication information clearly
- h. Develop and practice checking habits
- i. Encourage patients to be actively involved in process involving their medications
- j. Report and learn from errors
- k. Be able to perform drug calculations appropriately

APPENDIX II

USMLE CONTENT OUTLINE (APRIL 2015) FOR PATIENT SAFETY AND QUALITY IMPROVEMENT

I. Complexity/systems thinking

- A. Characteristics of a complex system and factors leading to complexity:** how complexity leads to error
- B. Sociotechnical systems:** systems engineering; complexity theory; microsystems
- C. Health care/organizational behavior and culture:** environmental factors, workplace design and process; staffing; overcommitment, space, people, time, scheduling; standardization, reducing variance, simplification, metrics; safety culture; integration of care across settings; overutilization of resources (imaging studies, antibiotics, opioids); economic factors

II. Quality improvement

A. Improvement science principles

- 1. Variation and standardization: variation in process, practice; checklists, guidelines, and clinical pathways
- 2. Reliability

B. Specific models of quality improvement: model for improvement: plan-do-study-act (PDSA), plan-do-check-act (PDCA); Lean, including recognition and types of waste; Six Sigma

C. Quality measurement

- 1. Structure, process, outcome, and balancing measures
- 2. Measurement tools: run and control charts
- 3. Development and application of system and individual quality measures: core measures; physician quality report system (PQRS); event reporting system

D. Strategies to improve quality

- 1. Role of leadership
- 2. Principles of change management in quality improvement: specific strategies

E. Attributes of high-quality health care

- 1. High-value/cost-conscious care: overutilization of resources, including diagnostic testing, medications
- 2. Equitable care: access
- 3. Patient-centered care
- 4. Timely care

III. Patient Safety

A. Patient safety principles

1. Epidemiology of medical error
2. Error categorization/definition: active vs latent errors; Swiss cheese model of error; preventable vs non-preventable; near miss events/safety hazards
3. Causes of error
 - a. Patient factors: understanding of medication use; health literacy; economic status; cultural factors (eg, religion); failure to make appointments; socioeconomic status
 - b. Physician factors: deficiency of knowledge; judgment errors; diagnostic errors; fatigue, sleep deprivation; bias – cognitive, availability, heuristic, anchoring, framing
 - c. Human factors (eg, cognitive, physical, environmental)
4. High reliability of organization (HRO) principles: change management and improvement science; conceptual models of improvement
5. Reporting and monitoring for errors: event reporting systems
6. Communication with patients after adverse events (disclosure/transparency)

B. Specific types of error

1. Transitions of care errors (eg, handoff communication including shift-to-shift, transfer, and discharge): handoffs and related communication; discontinuities; gaps; discharge; transfers
2. Medication errors
 - a. Ordering, transcribing, dispensing, administration (wrong quantity, wrong route, wrong drug)
 - b. Medication reconciliation
 - c. Mathematical error
3. Procedural errors
 - a. Universal protocol (time out); wrong patient; wrong site; wrong procedure
 - b. Retained foreign bodies
 - c. Injury to structures: paracentesis; bowel perforation; thoracentesis; pneumothorax; central venous/arterial line injuries; arterial puncture and bleeding and venous thrombosis; lumbar puncture bleeding; paralysis
 - d. Other errors: anesthesia-related errors; mathematical errors
4. Health care-associated infections: nosocomial infection – eg, surgical site, ventilator associated, catheter-related; handwashing procedures or inadequate number of handwashing stations; central line-associated blood stream infections; surgical site infections; catheter-associated urinary tract infections; ventilator-associated pneumonia
5. Documentation errors: electronic medical record (including voice-recognition software errors); record keeping; incorrect documentation (eg, wrong patient, wrong date, copying and pasting, pre-labeling)

6. Patient identification errors
 - a. Mislabeling: transfusion errors related to mislabeling
 - b. Verification/two identifiers: lack of dual validation, including verbal verification of lab results
7. Diagnostic errors: errors in diagnostic studies; misinterpretation
8. Monitoring errors
 - a. Cardiac monitoring/telemetry
 - b. Drug monitoring (warfarin, antibiotics)
9. Device-related errors
 - a. Malfunction
 - b. Programming error
 - c. Incorrect use

C. Strategies to reduce error

1. Human factors engineering
 - a. Situational awareness
 - b. Hierarchy of effective interventions: forcing function; visual cues
2. Error analysis tools: error/near miss analysis; failure modes and effect analysis; morbidity and mortality review; root cause analysis
3. Safety behavior and culture at the individual level: hierarchy of health care, flattening hierarchy, speak up to power; afraid to report, fear; psychological safety; closed-loop communication
4. Teamwork: principles of highly effective teams; case management; physician teams, physician-physician communication; interprofessional/intraprofessional teams; strategies for communication among teams, including system-provider communication, physician-physician communication (eg, consultations), interprofessional communication, provider-patient communication

APPENDIX III

USMLE CONTENT OUTLINE (APRIL 2015) FOR PATIENT SAFETY AND QUALITY IMPROVEMENT HIGHEST LEVEL TERMS

I. Complexity/systems thinking

- A. Characteristics of a complex system and factors leading to complexity
- B. Sociotechnical systems
- C. Health care/organizational behavior and culture

II. Quality improvement

- A. Improvement science principles
- B. Specific models of quality improvement
- C. Quality measurement
- D. Strategies to improve quality
- E. Attributes of high-quality health care

III. Patient Safety

- A. Patient safety principles
- B. Specific types of error
- C. Strategies to reduce error