Curriculum Development Centers Program

Awardee of The Office of the National Coordinator for Health Information Technology

HEALTH IT WORKFORCE CURRICULUM
COMPONENT BLUEPRINT
Version 2.0/Spring 2011

Component Number: 12
Component Name: Quality Improvement

Component Description (from FOA): Introduces the concepts of health IT and practice workflow redesign as instruments of quality improvement. Addresses establishing a culture that supports increased quality and safety. Discusses approaches to assessing patient safety issues and implementing quality management and reporting through electronic systems.

Assigned Institution: Johns Hopkins University
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Team Members: Patricia Dawson, MSN, RN, The Johns Hopkins Hospital
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Workforce Roles: Clinician/Practitioner Consultant, Practice Workflow and Information Management Redesign Specialist

Component Objectives

At the completion of this component, the student will be able to:

1. Analyze clinical decision-making requirements, including who, what, when, how, and where information is needed.
2. Design and implement information technology that supports effective teamwork, fosters open communication and enables shared decision-making to achieve quality patient care
3. Analyze clinical workflows to design information technology that supports clinical decision-making and care coordination.
4. Design and apply of information technology and standardized practices that support safety and quality
5. Formulate activation planning that supports and maintains safety and quality

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6. Select and apply quality measures for incorporation into information systems to enable review of outcomes of care and identification of improvement opportunities
7. Assess findings from quality reviews of reported events to design and implement clinical information system improvements.
8. Select improvement tools to assist clinical teams in improving the quality and safety of the electronic health record.
9. Monitor use of information technology for inappropriate use leading to hazards and errors
10. Design an information technology culture conducive to highly reliable processes built on human factors research.
11. Design and implement effective strategies to use information technology to decrease reliance on memory.

Component Units with Objectives and Topics

Unit 1: Introduction to Quality Improvement and Health Information Technology
Description: Introduction to Quality Improvement and Health Information Technology
This unit will introduce the learned to the concept of health care quality and the importance of meaningful use of health information technology in improving health care quality. The Institute of Medicine aims of quality improvement and the institute of Healthcare Improvement's triple aim are used to frame a discussion of the role of health information technology in leading to improvement of patient safety, efficiency, effectiveness, equity, timeliness and patient-centeredness. The learner is also provided with examples of how health IT can facilitate quality improvement as well as unintended consequences of health IT that can be byproducts of poor system design and user work-arounds.

Objectives:
1. Identify the current challenges in health care quality.
2. Examine the components of the health care system that have an impact on quality.
3. Explain health care quality and quality Improvement.
4. Describe quality improvement as a goal of meaningful use of meaningful use.
5. Analyze the ways that HIT can either help or hinder quality improvement.

Topics:
1.1 – Health Care Quality and HIT
1.2 – Relationship of QI and HIT
1.3 – Exemplars of QI and HIT

Unit 2: Principles of Quality and Safety for HIT
Description: This unit introduces the learner to the notion of high reliability organizations, and the importance of transparency and speaking up to a culture of

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safety. Characteristics of a culture of safety are outlined and the role of the HIT professional in this culture is defined. Strategies and tactics for communicating risks and advocating for resolution in a resistant culture are discussed.

Objectives:

1. Describe the ways that every system is designed to achieve the results it gets.
2. Apply the basic principles of safe design
3. Explain the ways that teams make wise decisions with diverse and independent input.

Topics:

2.1 – Improving Patient Safety

Unit 3: Reliability and Culture of Safety

Description: This unit introduces the learner to the notion of high reliability organizations, and the importance of transparency and speaking up to a culture of safety. Characteristics of a culture of safety are outlined and the role of the HIT professional in this culture is defined. Strategies and tactics for communicating risks and advocating for resolution in a resistant culture are discussed.

Objectives:

1. Discuss reliability as a tool for ensuring safety.
2. Examine how ultra-safe organizations operate.
3. Identify how teams make wise decisions.

Topics:

3.1– Reliability, culture of safety and HIT

Unit 4: Human Factors: HIT Design and Complexity

Description: This unit introduces the learned to the concepts of human factors and ergonomics and discusses their role in patient safety. The three types of ergonomics (physical, cognitive, and organizational) are defined, and examples of the application of these design principles to health care and patient safety are provided. This is followed by a review of two approaches to managing error (person and system) and the benefits of using the system approach in health care. The components of the SEIPS Model of work system and patient safety (person, environment, organization, technologies/tools, tasks, processes, and outcomes) are discussed and this model is applied to information technology.

Objectives:

1. Define human factors and ergonomics (HFE) is and its objectives
2. Introduce human factors ergonomics and discuss the role of HFE in patient safety

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Topics:

4.1 – Cognitive Ergonomics/Engineering
4.2 – Usability testing and inspection
4.3 – Human factors engineering and HIT

Unit 5: HIT Design to Support Teamwork and Communication

Description: The unit focuses on ways in which HIT can be designed to support care coordination. The focus is on electronic tools to support communication and teamwork during hand-off, care planning, and care transitions. Incorporation of automatic referral requests, data transfer to longitudinal records, and shared problem lists and daily goal forms into the EHR is discussed as well as the utility of electronic whiteboards and clipboard tools.

Objectives:

1. Assess the impact of teamwork and communication on patient safety and clinical effectiveness.
2. Investigate ways in which HIT design can serve as a barrier to effective communication.
3. Describe ways in which HIT design can enhance teamwork and communication.

Topics:

5.1 – Communication and care coordination
5.2 – Barriers of HIT
5.3 – Tools to enhance communication and care coordination

Unit 6: Decision Support for Quality Improvement

Description: This unit presents an in depth review of ways in which decision support can enhance quality and safety in patient care. Definitions of decision support are provided. Three cases studies of decision support in a variety of health care settings (inpatient, ambulatory, and public health) are discussed.

Objectives:

1. Define decision support, its importance and why it is difficult to implement.
2. Compare decision support tools that help improve quality.
3. Analyze the benefits and shortfalls of alerts and clinical reminders.
4. Investigate strategies for successful use of design and implementation of decision support systems.

Topics:

6.1 – Clinical Decision Support System (CDSS) Basics
6.2 – Clinical Decision Support Systems that Help Improve Quality
6.3 – Alerts and Clinical Reminders
6.4 – Tips for Successful Clinical Decision Support Systems

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Unit 7: Safe Workflow Design
Description: This unit introduces the learner to good practices for determining current workflow design and whether this design can be supported by HIT. It also presents ways of assisting users to redesign clinical work-flow as needed without loss of quality and safety in the clinical environment. Discussion of questions to ask when determining hard-wired and mobile technology placement is included.

Objectives:
1. Assess decision-making requirements in health or health care
2. Construct a work process flow chart
3. Appraise ways of incorporating decision-making requirements into health information technology design

Topics:
7.1 – Workflow Assessment
7.2 – Work Process Flow Charts
7.3 – Incorporating Workflow into HIT Design

Unit 8: HIT Implementation Planning to Maximize Quality and Safety
Description: This unit focuses the attention of the learner on ways in which HIT implementation can be managed to ensure the quality and safety are maintained during the transition period. Use of internal support pools, super-users, and front-line clinical experts to provide at-the-elbow support during the transition period is discussed. Emphasis is placed on the need for local adaptation and ongoing development of skills so that users can gain expertise in safe use of electronic health records and other information technology.

Objectives:
1. Critique an implementation team and the roles they play in ensuring quality
2. Analyze effective implementation planning
3. Assess the quality implications of “big bang” versus staggered approaches
4. Discuss “go live” support strategies that minimize risk

Topics:
8.1 – The Implementation Team
8.2 – Effective Implementation Planning
8.3 – Go-Live Support Strategies

Unit 9: HIT and Infecting a Patient Safety Culture
Description: This unit dives into the specifics of how poor design and misuse of technology can place patients and organizations at risk. A strong case is made for the responsibility of users to monitor information systems for risks and to ensure that they

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use these systems appropriately. Examples of poor design are provided, as well as their impact on patient care. The HIT professional's role in ensuring attention to usability and compatibility with workflow during the design and testing phase of implementation is discussed.

Objectives:
1. Apply QI tools to the analysis of HIT errors
2. Identify strategies for adaptive work that can be useful to HIT initiatives

Topics:
9.1 – The BSI Story and CUSP
9.2 – Strategies for Adaptive Work

Unit 10: HIT Design for Quality Reporting
Description: This unit discussed the fact that the design of electronic documents and flow sheets have a significant impact on the ability to extract quality measures from the resulting database. The importance of rigorous design and testing of system reports used for quality purposes is emphasized. Sample quality measures that are frequently requested of HIT systems are identified, and questions that guide data extraction are suggested.

Objectives:
1. Explain the attributes of an effective reporting system.
2. Examine the importance of standardized and structured health information.
3. Discuss how HIT can facilitate data collection and reporting for improving quality and safety.

Topics:
10.1 – Measuring Patient Safety

Unit 11: Data Quality Improvement
Description: This unit will introduce the learner to the importance of data quality and the role of the HIT professional in monitoring and ensuring the quality of data in clinical information systems. The theme of this unit is "beginning with the end in mind" and a review of both measurable and intangible dimensions of data quality is provided. Examples of each dimension are reviewed and a business case for quality is presented.

Objectives:
1. Discuss the impact of poor data quality on quality measurement
2. Identify ten attributes of data quality and key process recommendations
3. Discuss common causes of data insufficiency
4. Describe how health information technology design can enhance data quality

Topics:

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11.1 – Impact of Poor Data Quality
11.2 – Data Quality Attributes
11.3 – Common causes of Insufficient Data Quality and Design Recommendations

Unit 12: Learning from Mistakes: Error Reporting and Analysis and HIT
Description: Learning from mistakes: error reporting and analysis and HIT
This unit is designed to assist the learner in understanding the role of HIT in error detection and reporting and analysis of errors. The unit pulls together the links between learning from mistakes and the science of safety and safe culture. It includes a review of three tools for error detection and reporting: automated surveillance systems, error reporting systems, and predictive analytics and modeling. Examples of two powerful quality improvement tolls (root cause analysis and failure mode effects analysis) are provided and the role of HIT professional in contributing to these efforts is discussed.

Objectives:
1. Describe ways in which health information technology (HIT) can facilitate error detection and reporting
2. Explain how reporting errors can help to identify HIT system issues
3. Assess HIT for unintended negative consequences
4. Examine common themes in HIT design deficiencies
5. Apply QI tools to examine HIT errors

Topics:
12.1 – HIT, Error Detection and Reporting
12.2 – Unintended Consequences of HIT
12.3 – Quality Improvement Tools and HIT

Unit Elements
For each module, the following will be provided:
- Instructors manual
- PowerPoint slides with voice over
- Written narration for the slides
- Adobe PDF version of slides
- Lab components
- Externally available resources, i.e., links to free resources available over the web that will be used in the course
- Required and Suggested readings. (The modules will need to be stand alone, textbook readings can only be “suggested”. Required readings must be provided with the materials with written permission from the publisher to have them included in the distribution.)
- Learning exercises
- Assessments (test items, project, or other assignments used to assess mastery of the competencies)

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- These competencies and learning objectives will be taught using EHR simulation scenarios, role playing, use cases in support of the “hands on” nature.

Size/Contact Hours: Each unit is estimated to provide from 2-4 contact hours and require 6 -12 hours of independent or team work on the part of the student.

Local Resources Required for Implementation

- Internet connectivity
- Power Point

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