Notes to Instructors

This Instructor's Manual is a resource for instructors using the Quality Improvement component. Each component is broken down into Units, each of which will include the following elements:

- Learning objectives
- Suggested student readings, texts, reference links to supplement the narrated PowerPoint slides
- Lectures (voiceover PowerPoint in Flash format); PowerPoint slides (Microsoft PowerPoint format), lecture transcripts (Microsoft Word format); and audio files (MP3 format) for each lecture
- Self-assessment questions reflecting Unit Objectives with answer keys and/or expected outcomes
- Application Activities (e.g., discussion questions, assignments, projects) with instructor guidelines, answer keys and/or expected outcomes
## Contents

Component Overview ........................................................................................................... 4

Component Authors ............................................................................................................. 5

Component 12/Unit 1 ......................................................................................................... 8

Component 12/Unit 2 ......................................................................................................... 13

Component 12/Unit 3 ......................................................................................................... 16

Component 12/Unit 4 ......................................................................................................... 18

Component 12/Unit 5 ......................................................................................................... 20

Component 12/Unit 6 ......................................................................................................... 24

Component 12/Unit 7 ......................................................................................................... 28

Component 12/Unit 8 ......................................................................................................... 31

Component 12/Unit 9 ......................................................................................................... 35

Component 12/Unit 10 ...................................................................................................... 38

Component 12/Unit 11 ...................................................................................................... 40

Component 12/Unit 12 ...................................................................................................... 44

Component Acronym Glossary .............................................................................................. 47

Creative Commons Attribution-NonCommercial-ShareAlike 3.0 Unported ................................. 49
Component Overview
Quality Improvement introduces the concepts of health IT and practice workflow redesign as instruments of quality improvement. It addresses establishing a culture that supports increased quality and safety. It also discusses approaches to assessing patient safety issues and implementing quality management and reporting through electronic systems.

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.
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 Authors

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Ms. Dawson is the assistant director of nursing clinical quality and Magnet at The Johns Hopkins Hospital. She has experience in working with nurses at all levels to identify, develop and disseminate best-practices in clinical care and leadership that are worthy of Magnet recognition. She facilitates the implementation of safety and quality improvement projects and instructs nurses on conduct of clinical outcome measurement. Ms. Dawson has presented and published on topics the topics of evidence-based practice, quality improvement and measuring patient safety outcomes.

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Anna Maria Izquierdo-Porrera is the Chief Medical Officer & Quality Improvement Lead for BlueNovo, Inc, a company dedicated to the evaluation and implementation of health care delivery and support systems that improve the efficiency and efficacy of clinical care. Dr Izquierdo is responsible for the clinical and quality aspects of HIT solution deployments. She is also an improvement advisor and has worked with many health care organizations on quality improvement projects. Prior to joining BlueNovo, Dr. Izquierdo was the Medical Director at a Community Health Center and brings that additional unique perspective to the development of this curriculum.

Peter Pronovost, PhD, MD, JHU, School of Medicine
Peter J. Pronovost, MD, PhD is a practicing anesthesiologist and critical care physician, teacher, researcher, and international patient safety leader. Dr. Pronovost is a Professor in the Johns Hopkins University School of Medicine (Departments of Anesthesiology and Critical Care Medicine, and Surgery); in the Bloomberg School of Public Health (Department of Health Policy and Management) and in the School of Nursing. He is also Medical Director for the Center for Innovation in Quality Patient Care, which supports quality and safety efforts at the Johns Hopkins Hospitals. In 2003 Dr. Pronovost established the Quality and Safety Research Group to advance the science of safety. Dr. Pronovost and his research team are dedicated to improving health care through methods that are scientifically rigorous, but feasible at the bedside. Dr. Pronovost holds a doctorate in clinical investigation from the Johns Hopkins Bloomberg School of Public Health. Dr. Pronovost has been chosen by the editors of Time Magazine as one of their 100 most influential people for 2008. His work in innovating ways to improve patient safety and care are changing the way, not just the US, how the world thinks about medical care.

Team Members

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Likewise, the above also applies to the Curriculum Development Centers (including Columbia University, Duke University, Johns Hopkins University, Oregon Health & Science University, University of Alabama at Birmingham, and their affiliated entities).
Component 12/Unit 1

Unit Title
Introduction to Quality Improvement and Health Information Technology

Unit Description
This unit will introduce the learner 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 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 unit will also review the basic principles of quality improvement: set an aim, design a measure strategy, attempt change, and learn about your system. The learner is also provided with examples of how health IT can facilitate quality improvement and how well-crafted HIT solutions can improve safety, effectiveness, efficiency, equity, timeliness, and patient-centeredness of care and accomplish the best care for the whole population at the lowest cost.

Unit Objectives
By the end of this unit the student will be able to:
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. Describe QI as a goal of meaningful use of HIT.
4. Analyze the ways that HIT can either help or hinder quality improvement.
5. Explain health care quality and quality improvement (QI).

Unit Topics/Lecture Titles
1.1 – Health Care Quality and HIT
1.2 – Relationship of QI and HIT

Unit References
(All links accessible as of 1/1/2012)
Lecture 1a

3. Endorsing national consensus standards for measuring and publicly reporting on performance; California Academy of Family Physicians Diabetes Initiative Care Model Change Package originally developed by Lumetra,
6. President Barack Obama. Barack Obama, speech at George Mason University, January 12, 2009

Lecture 1a Charts, Tables, and Figures
1.1 NCQA Scoring Tool. Produced by the National Committee for Quality Assurance. Available from: http://www.ncqa.org/LinkClick

Lecture 1a Images
Slide 5: Meaningful Use, Patient Centered Medical Home, Accountable Care Organization. Courtesy of Dr. Anna Maria Izquierdo-Porrera
Slide 9: Meaningful Use Stages. Courtesy of Dr. Anna Maria Izquierdo-Porrera

Lecture 1b


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   http://www.cms.gov/
5. IOM—International Institute of Medicine. Available from: 
   http://iom.edu/
6. Institute for Healthcare Improvement (IHI) Available from: 
   http://www.ihi.org/Pages/default.aspx
7. Joint Commission. Available from: 
   http://www.jointcommission.org/
8. National Committee for Quality Assurance. Available from: 
   http://www.ncqa.org/
   http://www.qualityforum.org/Home.aspx
10. Physician Consortium for Performance Improvement (PCPI)-American Medical Association. Available from: 

**Lecture 1b Images**
Slide 4: Quality Health Care: Who Defines It? Courtesy of Dr. Anna Maria Izquierdo-Porrera
   http://www.ahrq.gov/qual/qrdr09.htm
Slide 11: Basics of Quality Improvement. Courtesy of Dr. Anna Maria Izquierdo-Porrera
Slide 13: Process Measure, Outcome Measure, Balancing Measure. Courtesy of Dr. Anna Maria Izquierdo-Porrera

**Lecture 1b Charts, Tables, and Figures**
1.2 Example of a Change Care Package. California Academy of Family Physicians Diabetes Initiative Care Model Change Package. Available from: 

*Indicates this link is no longer functional.
Lecture 1c
2. Lecture 1c Images
3. Slide 3. What is Health Care Quality? Courtesy Dr. Anna Maria Izquierdo-Porrera

Lecture 1d
2. http://gunston.gmu.edu/.../cedars-sinai%20cpo...washpost%203-21-05

Lecture 1d Images
Image 2. Children’s Hospital, Pittsburgh, PA. Available from: http://www.chp.edu/CHP/Community+Preview+Photo+Gallery
Slide 13: Children’s Hospital, Pittsburgh, PA. Available from: http://www.chp.edu/CHP/Community+Preview+Photo+Gallery

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Unit Suggested Readings

Student Application Activities
- comp12_unit1_activity.doc
- comp12_unit1_activity_key.doc
- comp12_unit1_self_assess.doc
- comp12_unit1_self_assess_key.doc
Component 12/Unit 2

Unit Title
Principles of Quality and Safety for HIT

Unit Description
This unit is designed to introduce the learner to the magnitude of the problem of medical error in the US. The health care system and the role of the learning in helping to make our system safer is explored. Emphasis is placed on how the science of safety can be applied to health care and the impact of system factors on patient safety. Three principles of safe design are introduced (eliminate steps, create independent checks, and learn from mistakes).

Unit Objectives
By the end of this unit the student will be able to:
1. Investigate the fallibility of people and systems.
2. Describe the ways that every system is designed to achieve the results it gets.
3. Apply the basic principles of safe design.
4. Explain the ways that teams make wise decisions with diverse and independent input.

Unit Topics/Lecture Titles
2.1 – Improving Patient Safety

Unit References
(All links accessible as of 1/1/2012)

Lecture 2a

Lecture 2a Images

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Lecture 2b


Lecture 2b Images


Slide 9: Johns Hopkins lacrosse team . Courtesy Johns Hopkins University.

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Unit Suggested Readings

Student Application Activities
comp12_unit2_activity.doc
comp12_unit2_activity_key.doc
comp12_unit2_self_assess.doc
comp12_unit2_self_assess_key.doc
Component 12/Unit 3

Unit Title
Introduction to Reliability

Unit Description
This unit introduces the learner to the notion of high reliability organizations. Reliability principles, used to design systems that compensate for the limits of human ability, can improve safety and the rate at which a system consistently produces desired outcomes.

Unit Objectives
By the end of this unit the student will be able to:
1. Discuss the basic concepts of reliability.
2. Understand what makes organizations highly reliable.

Unit Topics/Lecture Titles
3.1 – Introduction to Reliability.

Unit References
(All links accessible as of 1/1/2012)

Lecture 3
1. Elgert, S. Reliability Science: Reducing the Error Rate in Your Practice. These seven principles can help ensure that your patients receive the right care at the right time every time. *Fam Pract Manag.* 2005 Oct;12(9):59-63.

*Indicates this link is no longer functional.
Lecture 3 Charts, Tables, and Figures
3_1 Which Clinic Would You Prefer? Courtesy Dr. Anna Maria Izquierdo-Porrera
3_2 Examples of Reliability in Health Care. Courtesy Dr. Anna Maria Izquierdo-Porrera

Lecture 3 Images

Unit Suggested Readings
3. Reliability: Sepsis Management Bundle http://www.ihi.org/knowledge/Pages/Measures/ReliabilitySepsisManagementBundle.aspx*

Student Application Activities
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comp12_unit3_activity_key.doc
comp12_unit3_self_assess.doc
comp12_unit3_self_assess_key.doc

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Component 12/Unit 4

Unit Title
Reliability and Culture of Safety

Unit 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.

Unit Objectives
By the end of this unit the student will be able to:
1. Discuss reliability as a tool for ensuring safety.
2. Examine how ultra-safe organizations operate.
3. Identify how teams make wise decisions.

Unit Topics/Lecture Titles
4.1 – Reliability, Culture of Safety and HIT

Unit References
(All links accessible as of 1/1/2012)

Lecture 4

Lecture 4 Charts, Tables, and Figures
Table 4_1. The five specific concepts that help create the state of mindfulness that is needed for reliability, which in turn is a prerequisite for safety. Available from: http://www.ahrq.gov/qual/hroadvice/hroadvicefig1-6.htm

*Indicates this link is no longer functional.
Lecture 4 Images

Unit Suggested Readings

Student Application Activities
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comp12_unit4_self_assess.doc
comp12_unit4_self_assess_key.doc

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Component 12/Unit 5

Unit Title
Decision Support for Quality Improvement

Unit 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.

Unit Objectives
By the end of this unit the student will be able to:
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.

Unit Topics/Lecture Titles
5.1 – Clinical Decision Support System (CDSS) Basics
5.2 – Alerts and Clinical Reminders.

Unit References
(All links accessible as of 1/1/2012)
Lecture 5a

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**Lecture 5a Images**
Slide 10: Decision Support. Adapted from Perreault & Metzer 1999 by Dr. Anna Maria Izquierdo-Porrera

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Lecture 5b


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Version 3.0/Spring 2012

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**Lecture 5b Images**
Slide 12: Basic laboratory Alerts. Dr. Anna Maria Izquierdo-Porrera
Slide 15: Practice Reminders. Dr. Anna Maria Izquierdo-Porrera
Slide 16: Administrative Reminders. Dr. Anna Maria Izquierdo-Porrera

**Student Application Activities**
comp12_unit5_activity.doc
comp12_unit5_activity_key.doc
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comp12_unit5_self_assess_key.doc
Component 12/Unit 6

Unit Title
Workflow Design

Unit 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.

Unit Objectives
By the end of this unit the student will be able to:
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 HIT design.

Unit Topics/Lecture Titles
6.1 – Workflow Assessment
6.2 – Work Process Flow Charts

Unit References
(All links accessible as of 1/1/2012)

Lecture 6a
Lecture 6a Images
Slide 9: Work Process Flowchart. Courtesy Dr. Stephanie Poe
Slide 11: Work Process Flowchart. Courtesy Dr. Stephanie Poe
Slide 12: Work Process Flowchart Symbols. Courtesy Dr. Stephanie Poe
Slide 17: PPD Workflow Courtesy Dr. Stephanie Poe

Lecture 6b

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**Student Application Activities**
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Component 12/Unit 7

Unit Title
HIT Design to Support Teamwork and Communication

Unit 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.

Unit Objectives
By the end of this unit the student will be able to:
1. Assess the impact of teamwork and communication on patient safety and care coordination.
2. Investigate ways in which HIT design can serve as a barrier to effective communication.
3. Describe ways in which HIT design can enhance communication and care coordination.

Unit Topics/Lecture Titles
7.1 – Communication and care coordination and barriers of HIT
7.2 – Tools to enhance communication and care coordination

Unit References
(All links accessible as of 1/1/2012)

Lecture 7a

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**Lecture 7a Images**
Slide 4: A Man’s Silhouette. Creative Commons Credits to all-silhouettes.com
Slide 11: Hospital Discharges. Image courtesy Dr. Stephanie Poe.
Slide 15: Coordination of Care. Image courtesy Dr. Stephanie Poe.

**Lecture 7b**

**Lecture 7b Images**
Slide 3: IT, Communication, & Workflow. Courtesy Dr. Stephanie Poe
Slide 4: Barriers to Communication. Courtesy Dr. Stephanie Poe
Slide 6: Female Silhouette. Creative Commons Credits to all-silhouettes.com
Slide 9: Social Network Analysis. Adapted from Anderson et al, 2002 by Dr. Stephanie Poe

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Slide 10: Communication Workflow Support and System Design. Adapted from Anderson et al, 2002 by Dr. Stephanie Poe

**Lecture 7c**


**Lecture 7c Images**

Slide 3: Female Silhouette. Creative Commons all-silhouettes.com
Slide 4: Communication Tools. Courtesy Dr. Stephanie Poe.
Slide 12: Multidisciplinary Rounds Tools. Courtesy Dr. Anna Maria Izquierdo-Porrera

**Unit Suggested Readings**


**Student Application Activities**

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Health IT Workforce Curriculum  Quality Improvement   30
Version 3.0/Spring 2012

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Component 12/Unit 8

Unit Title
HIT and Infecting a Patient Safety Culture

Unit 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 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.

Unit Objectives
By the end of this unit the student will be able to:
1. Apply QI tools to the analysis of HIT errors.
2. Identify strategies for adaptive work that can be useful to HIT initiatives.

Unit Topics/Lecture Titles
8.1 – The BSI Story and CUSP
8.2 – Strategies for Adaptive Work

Unit References
(All links accessible as of 1/1/2012)

Lecture 8a

Lecture 8a Images
Slide 3: Dr. Peter Pronovost Listens to a Patient’s Heart. The photo was taken during filming for Program One - “Silent Killer” at Johns Hopkins University’s Hospital and Children’s Center for the RAM Campaign. Available from: [http://www.ramcampaign.org/pages/campaign_photos.htm](http://www.ramcampaign.org/pages/campaign_photos.htm)
Slide 4: Dr. Peter Pronovost. The photo was taken during filming for Program One - “Silent Killer” at Johns Hopkins University’s Hospital and

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Slide 5: Key Topics. Courtesy Dr. Anna Maria Izquierdo-Porrera


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Lecture 8c


Lecture 8c Images


Slide 5. Dr. Peter Pronovost. The photo was taken during filming for Program One - “Silent Killer” at Johns Hopkins University’s Hospital and Children’s Center for the RAM Campaign. Available from: http://www.ramcampaign.org/pages/campaign_photos.htm


Unit Suggested Readings


Student Application Activities

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Component 12/Unit 9

Unit Title
HIT Implementation Planning for Quality and Safety

Unit 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.

Unit Objectives
By the end of this unit the student will be able to:
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

Unit Topics/Lecture Titles/Lecture Titles
9.1 – The Implementation Team and Effective Implementation Planning
9.2 – Go-Live Support Strategies

Unit References
Lecture 9a

*Indicates this link is no longer functional.


8. Sargeant, J., Loney ,E., Murphy, G. Effective interprofessional teams: “Contact is not enough” to build teams. *J Contin Educ Health Prof.* 2008 Fall;28(4):228-234.


**Lecture 9a Images**

Slide 4: Effective Implementation Teams – Team Characteristics..Adapted from Mickan and Rodger by Dr. Anna Maria Izquierdo-Porrera

Slide 13: HIT Implementation Strategies. Dr. Anna Maria Izquierdo-Porrera

**Lecture 9b**


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Lecture 9b Images
Slide 3: The Universe’s “Baby Picture.” Courtesy NASA. Available from: http://science.nasa.gov/astrophysics/focus-areas/what-powered-the-big-bang

Student Application Activities
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Component 12/Unit 10

Unit Title
Measuring Quality

Unit Description
This unit we will discuss the basics of measurement for quality. We will introduce the concepts of understanding variation. We will also discuss 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.

Unit Objectives
By the end of this unit the student will be able to:
1. Understand the basic concepts of variation.
2. Explain the attributes of an effective reporting system.
3. Examine the importance of having standardized and structured health information so that you can use those data to make valid reports.
4. Discuss how HIT can facilitate data collection and reporting for improving quality of care and patient safety.

Unit Topics/Lecture Titles
10.1 Measuring Patient Safety

Unit References
(All links accessible as of 1/1/2012)

Lecture 10 Images
Slide 5. Different interpretations of variation. Adapted From Nolan TW, Pronovost LP. Understanding variation. Quality Press. 1990 (May)
Slide 8. Graphical Representation of Data. Adapted from Perla, Provost & Murray (2011) by Dr. Anna Maria Izquierdo-Porrera
Slide 9. Run Charts. Adapted from Perla, Provost & Murray (2011) by Dr. Anna Maria Izquierdo-Porrera
Slide 12 Statistical Rules to identify non-random signals in run charts. Adapted from Perla, Provost & Murray (2011) by Dr. Anna Maria Izquierdo-Porrera
Slide 13 Statistical Rules to identify non-random signals in run charts. Adapted from Perla, Provost & Murray (2011) by Dr. Anna Maria Izquierdo-Porrera
Slide 14 Statistical Rules to identify non-random signals in run charts. Adapted from Perla, Provost & Murray (2011) by Dr. Anna Maria Izquierdo-Porrera
Slide 15 Statistical Rules to identify non-random signals in run charts. Adapted from Perla, Provost & Murray (2011) by Dr. Anna Maria Izquierdo-Porrera
Slide 16. P.O.B. Dr. Anna Maria Izquierdo-Porrera

Student Application Activities
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comp12_unit10_self_assess.doc
comp12_unit10_self_assess_key.doc

Unit Suggested Readings

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Component 12/Unit 11

Unit Title
Data Quality Improvement

Unit 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.

Unit Objectives
By the end of this unit the student will be able to:
1. Understand the different purposes of data.
2. Discuss the impact of poor data quality on quality measurement.
3. Identify ten attributes of data quality and key process recommendations.
4. Explore the attributes of data quality and key process recommendations for maintaining data integrity.
5. Discuss common causes of data insufficiency.
6. Describe how health information technology design can enhance data quality.

Unit Topics / Lecture Titles
11.1 Characteristics and use of data.
11.2 Common causes of Insufficient Data Quality and Design Recommendations.

Unit References
(All links accessible as of 1/1/2012)

Lecture 11a

*Indicates this link is no longer functional.


**Lecture 11a Images**

Slide 3. Data and Healthcare. Dr. Anna Maria Izquierdo-Porrera. AHIMA

Slide 5. Health Quality Measure Format (HQMF). Dr. Anna Maria Izquierdo-Porrera

Slide 7. Data Quality Management Model. Dr. Anna Maria Izquierdo-Porrera

**Lecture 11a Charts, Tables, and Figures**

Table 11_1. QI. Vs Research. Adapted by Dr. Anna Maria Izquierdo-Porrera from Solberg et al (1997)

**Lecture 11b References**


**Lecture 11c References**

1. Arts D, De Keizer NF, Scheffer GT. Defining and improving data quality in medical registries: a literature review, case study,


Lecture 11c images
Slide 5. Data Quality Enhancement Opportunities. Adapted by Dr. Anna Maria Izquierdo-Porrera from Arts at al (2002).
Slide 7. More Best Practices: Prevention. Dr. Anna Maria Izquierdo-Porrera
Slide 8. Best Practices: Detection. Dr. Anna Maria Izquierdo-Porrera
Slide 9. Best Practices: Improvement Actions. Dr. Anna Maria Izquierdo-Porrera

Student Application Activities
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Additional Resources


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Component 12/Unit 12

Unit Title
Learning from Mistakes: Error Reporting and Analysis and HIT

Unit Description
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.

Unit Objectives
By the end of this unit the student will be able to:

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

Unit Topics/Lecture Titles
12.1 HIT, Error Detection, and Reporting
12.2 Quality Improvement Tools and HIT

Unit References
(All links accessible as of 1/1/2012)

Lecture 12a

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**Lecture 12a Images**
Slide 4. Adapted from Reason J. Human Error: Models and Management. *BMJ* 320:768 2000. by Dr. Peter Pronovost. Available from: [http://www.bmj.com/content/320/7237/768.long](http://www.bmj.com/content/320/7237/768.long)
Slide 5. Adapted from Reason J. Human Error: Models and Management. *BMJ* 320:768 2000. by Dr. Peter Pronovost. Available from: [http://www.bmj.com/content/320/7237/768.long](http://www.bmj.com/content/320/7237/768.long)
Slide 13. Health care data repositories . Dr. Anna Maria Izquierdo-Porrera .
Slide 14. Types of Outcomes. Dr. Anna Maria Izquierdo-Porrera

**Lecture 12b**

**Lecture 12b Images**
Slide 4. Types of Error. Dr. Anna Maria Izquierdo-Porrera
Slide 5. Types of Error II. Dr. Anna Maria Izquierdo-Porrera

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Lecture 12c

Lecture 12c Images
Slide 3. Quality Improvement Tools. Dr. Stephanie Poe
Slide 5. Root Cause Analysis. Dr. Stephanie Poe
Slide 6. Daughter. Dr. Stephanie Poe
Slide 15. Failure Mode Effects Analysis. Dr. Stephanie Poe
Slide 18. FMEA: Steps. Dr. Stephanie Poe
Slide 22. FMEA Diagram. Dr. Stephanie Poe
Slide 24. Quality Improvement Tools. Dr. Stephanie Poe

Lecture 12c Charts, Tables, and Figures
Table 12.1 Conduct a Hazard Analysis. Dr. Stephanie Poe
Table 12.2 Conduct a Hazard Analysis II. Dr. Stephanie Poe

Student Application Activities
comp12_unit12_activity.doc
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### Component Acronym Glossary

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>ACO</td>
<td>Accountable Care Organization</td>
</tr>
<tr>
<td>AAP</td>
<td>American Academy of Pediatrics</td>
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<tr>
<td>AAFP</td>
<td>American Academy of Practitioners</td>
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<tr>
<td>ACP</td>
<td>American College of Physicians</td>
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<tr>
<td>AOA</td>
<td>American Osteopathic Association</td>
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<td>ASPs</td>
<td>Application service providers</td>
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<td>AHIMA</td>
<td>American Health Information Management Association</td>
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<td>AHRQ</td>
<td>Agency for Healthcare Research and Quality</td>
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<td>AMA</td>
<td>American Medical Association</td>
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<tr>
<td>BSI</td>
<td>Bloodstream infections</td>
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<td>CAH</td>
<td>Critical access hospitals</td>
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<td>CAT</td>
<td>Computerized axial tomography</td>
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<td>CAPS</td>
<td>Consumers Advancing Patient Safety</td>
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<td>CDS</td>
<td>Clinical decision support</td>
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<tr>
<td>CDSS</td>
<td>Clinical decision support systems</td>
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<td>CICU</td>
<td>Cardiac intensive care unit</td>
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<td>CIM</td>
<td>Contextual Implementation Model</td>
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<td>CIS</td>
<td>Client information system</td>
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<td>CLAS</td>
<td>Culturally and linguistically appropriate services</td>
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<td>CMS</td>
<td>Centers for Medicare &amp; Medicaid Services</td>
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<tr>
<td>COWS</td>
<td>Computers on Wheels</td>
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<td>CPOE</td>
<td>Computerized Provider Order Entry</td>
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<td>ED</td>
<td>Emergency Departments</td>
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<td>EHR</td>
<td>Electronic Health Record</td>
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<td>eMAR</td>
<td>Electronic medication record</td>
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<tr>
<td>FMEA</td>
<td>Failure Mode Effects Analysis</td>
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<tr>
<td>HIE</td>
<td>Health information exchange</td>
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<td>HIM</td>
<td>Healthcare Information and Management Systems Society</td>
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<td>HIT</td>
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<td>HITECH</td>
<td>Health Information Technology for Economic and Clinical Health</td>
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<td>ICU</td>
<td>Intensive care unit</td>
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<tr>
<td>IHI</td>
<td>Institute for Healthcare Improvement</td>
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<td>IJ</td>
<td>Internal Jugular</td>
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<tr>
<td>IOM</td>
<td>Institute of Medicine</td>
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<tr>
<td>IT</td>
<td>Information Technology</td>
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<td>ISMP</td>
<td>Institute for Safe Medication Practices</td>
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<tr>
<td>MLM</td>
<td>Medical logic module</td>
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<tr>
<td>mmHg</td>
<td>Millimeters of Mercury</td>
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</tbody>
</table>
MRI—Magnetic resonance imaging
NCNQ—National Center for Nursing Quality
NCPS—National Center for Patient Safety
NPSF—National Patient Safety Foundation
OR—Operation room
POE—Provider Order Entry
PSO—Patient Safety Organization
RCA—Root Cause Analysis
SEIPS—Systems Engineering Initiative for Patient Safety
SICU—Surgical Intensive Care Unit
WICU—Weinburg Intensive Care Unit
WHO—World Health Organization
WNL—within normal limits