

Implementing Evidence Based Systems to Enhance Patient Safety

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Why safety?

Why safety?

“...there are some patients we cannot help, there are none we cannot harm...”

Arthur Bloomfield, M.D.

Quality of Healthcare in America Project 2003

-----Dr. Ken Stahl

Why safety?

- The IOM in 1999 caused an stir in the health care industry with the release of its publication: “To err is Human: building a safer health system”
- Critical highlights of this report showed:
 - serious iatrogenic harm occurred in 3.7% of the hospitalizations
 - 6.5% of which caused permanent dysfunction

Why safety?

- 13.6% caused the patient's death
- More people died as a result of medical error than vehicle accidents, breast cancer or AIDS
- This gave birth to renewed awareness and interest in “quality of health care & safety of patients” in the health sector → health care reforms.
- Initiatives for promoting the safety and quality of healthcare are growing in number worldwide

Why safety?

- Millions benefit from medical care, yet they remain at high risk of harm from the care they receive
- Many patients do not receive appropriate care or are harmed as a result of their care
- Increase in adverse events (AE), that is, of non-intentional harm resulting in temporary or permanent disability, prolong hospital stay or death, as a consequence of the healthcare provided

Why safety?

- Safety and quality is central to the delivery of health care, and considerations about safety and quality are imperative

What is safety?

- Safety is more than just the absence of errors
- A dynamic set of processes that identify, evaluate, and minimize hazards
- An outcome that is manifested by fewer medical errors and that minimized risk or hazard
- It is not just freedom from accidental injury but involves the establishment of operational systems and processes that increase the reliability of patient care and well being.

Safety cont'd

- Patient safety encompasses accident prevention; inappropriate, harmful, or mistaken treatment planning; poorly performed procedures; and questionable or missed diagnoses.

Safety cont'd

- “Truly achieving acceptable levels of patient safety requires the implementation of clinically intelligent, flexible information systems that standardize processes, remove the potential for human error, and place the physician and others in the pure role of decision-maker and caregiver, offering their services with the maximum amount of patient information, medical knowledge, and clinical decision support.” – Chaiken et al 2003

Origin of problem

- “To err” by nature is “human” → accidents are inevitable and errors are bound to occur
- This can be mitigated by effective and efficient “regulatory system”
- Poor processes, not error-prone people, are the main cause of medical errors.
- Medical errors cannot be significantly reduced without systematic changes in processes.

- Medical errors are the result of system and process failures that directly lead to mistakes or contribute to human mistakes that directly or indirectly result in poor outcomes.

Source of system error

- Overall culture
- Education/Training/Experience
- System design
- Throughput impedance
- Resource availability
- Demand/Volume
- Shift-work/schedules



Human error

- The point of an investigation is not to find where people went wrong.
- It is to understand why their assessments and actions made sense at the time.
- Human errors are symptoms of deeper trouble

- Investment in error-resistant systems and strategies based on proven scientific evidence are invaluable in reducing the likelihood of poor patient outcomes and avoid medical errors
- Use of research evidence in clinical practice is an expected standard of practice in health care but numerous barriers exist that create a gap between new knowledge and implementation of that knowledge to improve patient care

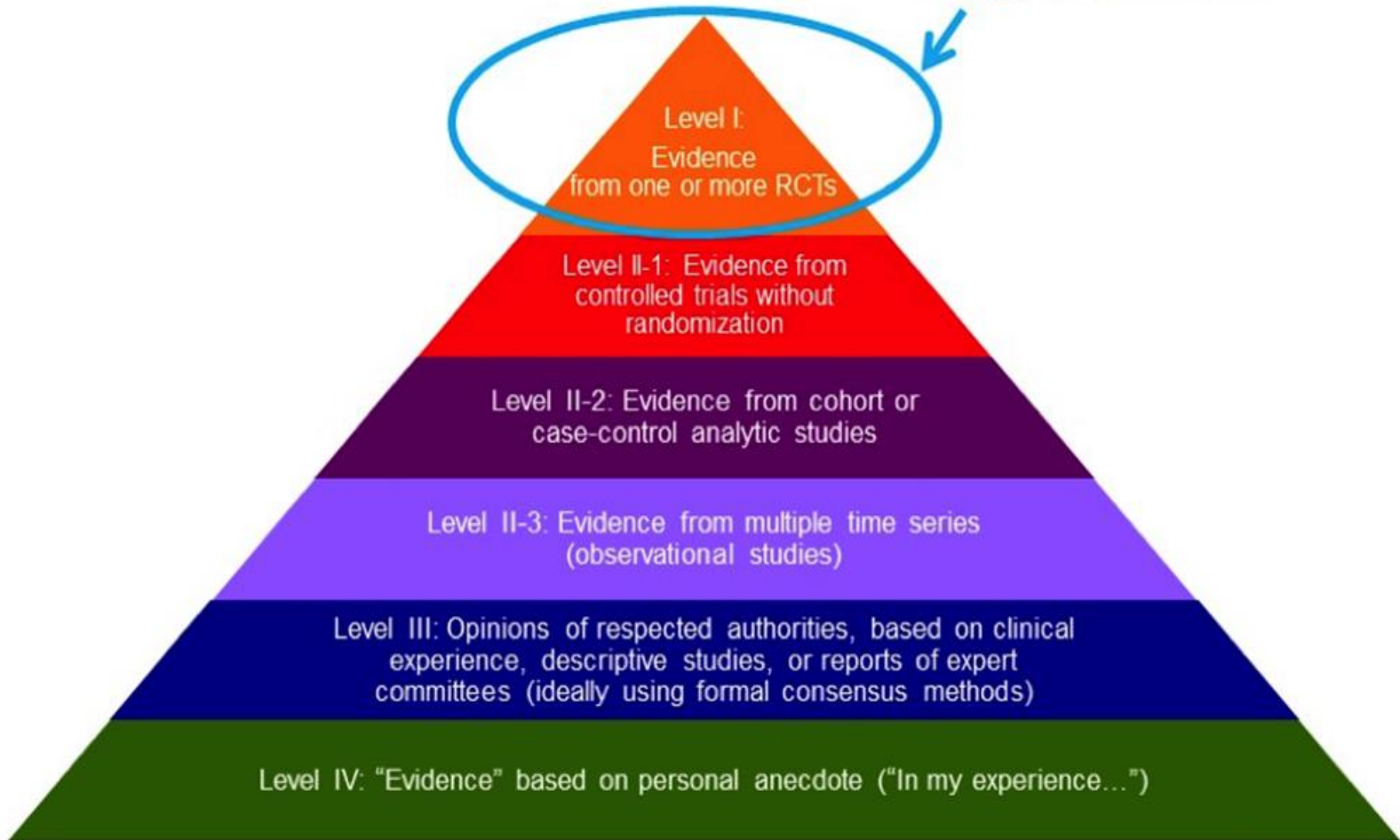
Evidence based practice

- a problem solving approach to clinical decision-making that involves the conscientious use of the best available evidence (including a systematic search for and critical appraisal of the most relevant evidence to answer a clinical question) with one's own clinical expertise and patient values and preferences to improve outcomes for individuals, groups, communities, and systems

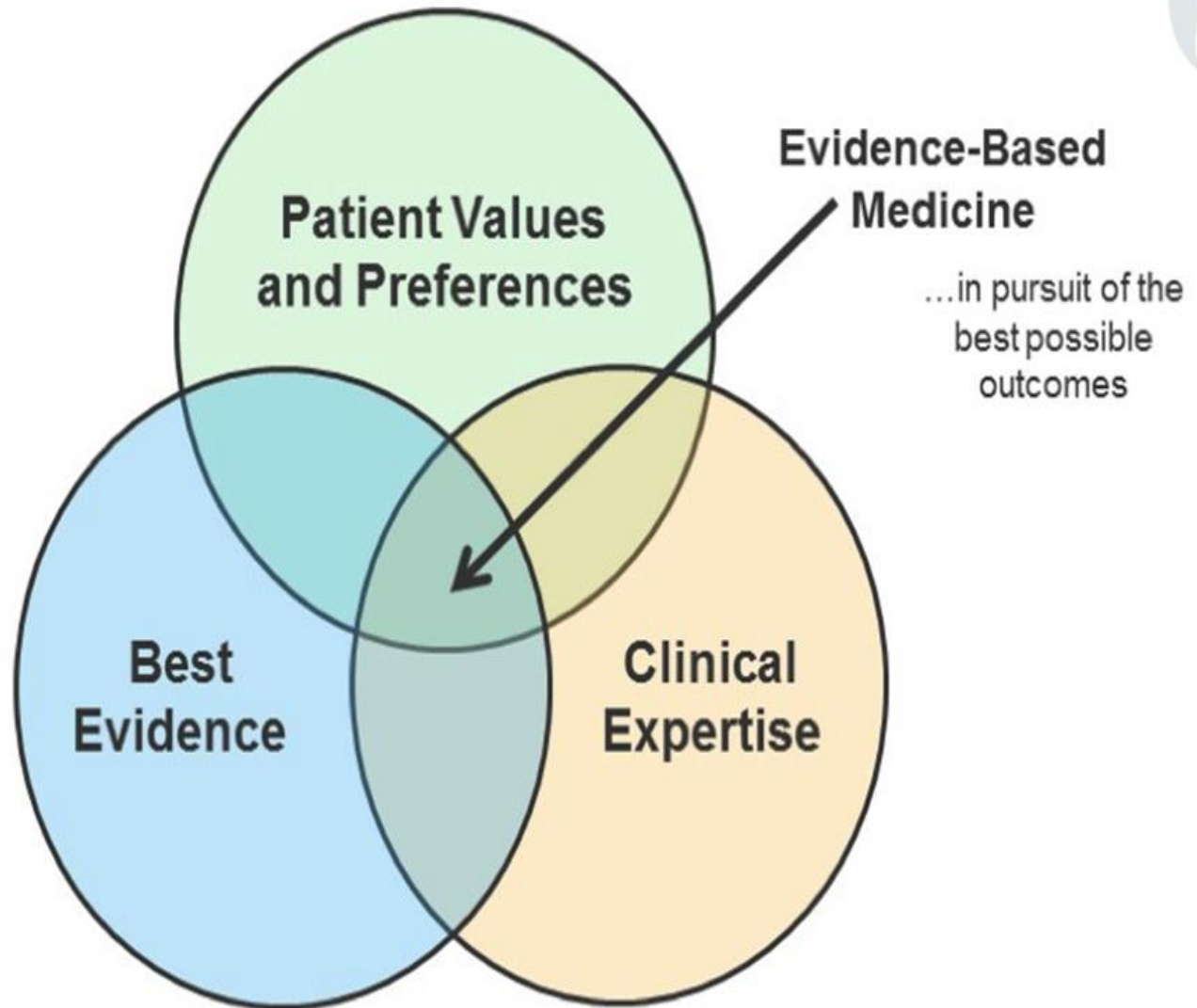
- Applying validated therapies through the application of evidence-based medicine is one proven way to improve health care outcomes while conserving resources.
- Reduces the variability in the patient care process, improving quality and controlling cost.
- **Historically**, physicians practiced medicine autonomously with almost complete sovereignty over their actions → variability in care

Levels of Evidence

Randomized Controlled
Trials (RCTs)
“the gold standard”



Components of Evidence-Based Medicine



Clinical expertise

- Incorporated within a clinician's expertise are:
 - Clinical judgment
 - Internal evidence from the patient's history and physical exam, as well as data gathered from EBP, quality improvement, or outcomes management projects
 - Evaluation of available resources required to deliver the best practices

The Conceptual Framework for Healthcare

The Merging of Science and Art: EBP Within a Context of Caring Results in the Highest Quality of Patient Care

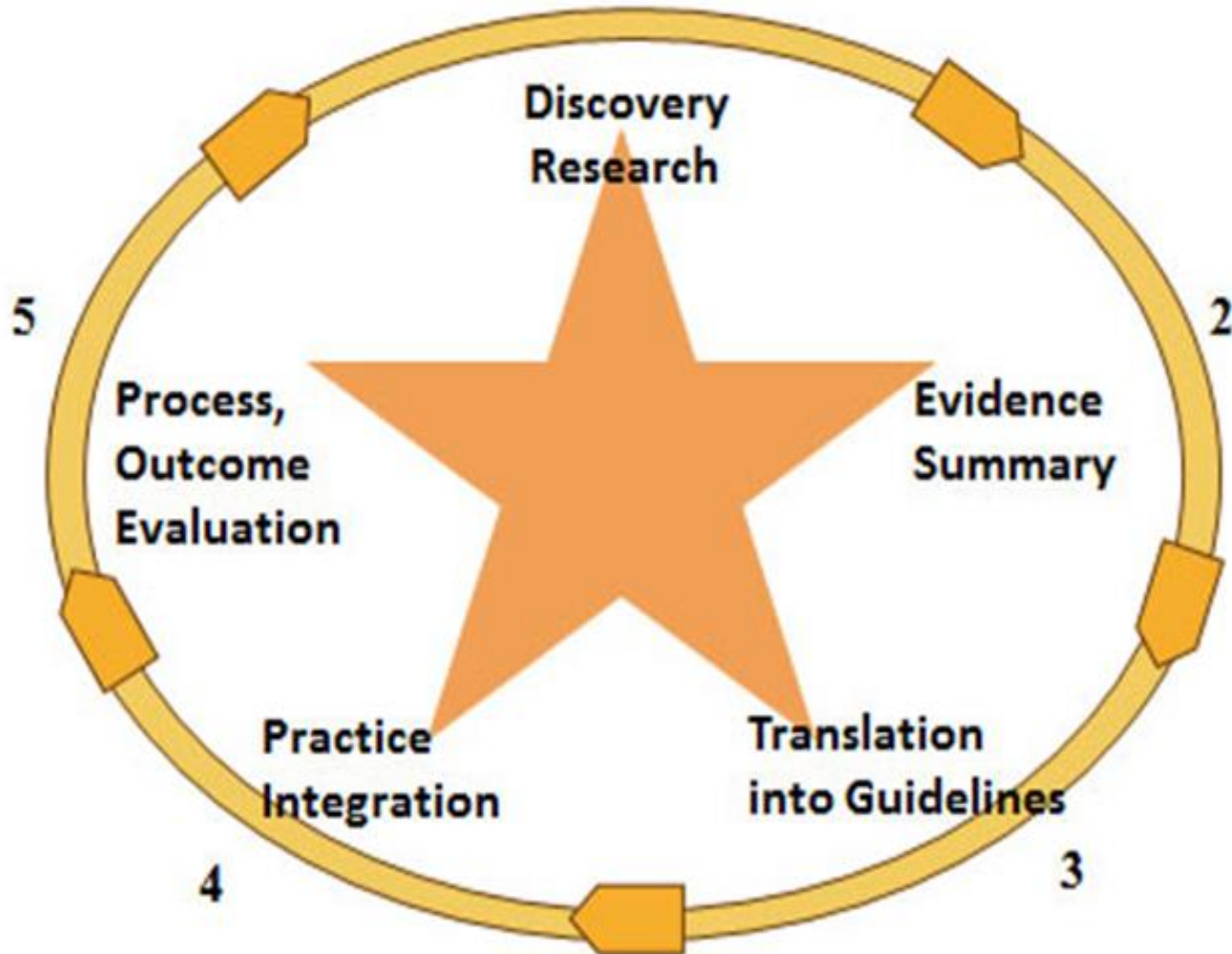
EBP Organizational Culture and Environment



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Figure 1.1 Components of an EBP within a culture and environment that support it lead to the best clinical decisions and patient outcomes.

ACE Star Model of Knowledge Transformation



There is huge gap between research evidence and practice



- Evidence-based medicine and the implementation of patient safety recommendations are the two cornerstones for improving clinical care outcomes

Implementation EBP

- The methods of promoting the systematic uptake of clinical research findings and other evidence-based practices into routine practice and hence improve the quality and effectiveness of health care.
- However, the factors associated with successful translation of appropriate evidence into clinical practice are not clear.

Advantages of implementation of EBS

- Improves the patient experience of care (i.e. quality and satisfaction)
- Improves the health of populations
- Reduces the per capita cost of healthcare
- Improves work life and decrease burnout in clinicians

Barriers

- Inadequate knowledge of current evidence and skills in EBP
- Lack of cultures and environments that support EBP
- Misperceptions that EBP takes too much time
- Outdated organizational politics and policies
- Limited resources and tools
- Resistance to change from norm
- Inadequate numbers of EBP mentors in healthcare systems

Stimuli

- An organizational vision, mission, and goals that include EBP
- An infrastructure with EBP tools and resources
- Orientation sessions for new clinicians that communicate an expectation of delivering evidence-based care
- Leaders and managers who “walk the talk” and support their clinicians to deliver evidence-based care

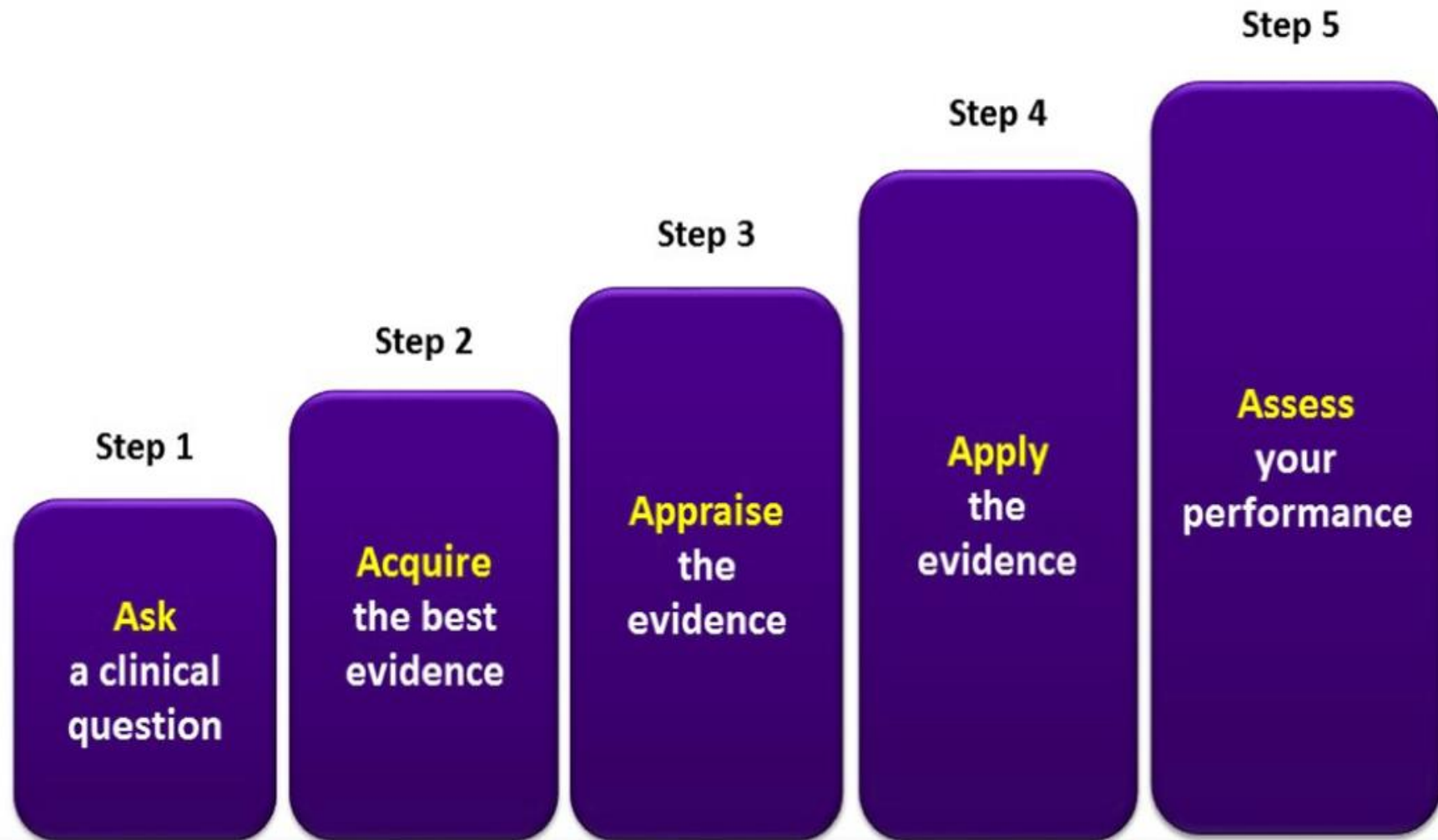
Stimuli cont'd

- A critical mass of EBP mentors to work with point-of-care clinicians in facilitating evidence-based care
- Evidence-based policies and procedures
- Orientations and ongoing professional development seminars that provide EBP knowledge and skills-building along with an expectation for EBP

Stimuli cont'd

- Integration of the EBP competencies in performance evaluations and clinical ladders
- Recognition programs that reward evidence-based care

The 5 Steps of Evidence-Based Medicine



Modified 7 steps in implementation of EBS

- **Step 0** = Cultivate a spirit of inquiry within an EBP culture and environment.
- **Step 1** = Ask the burning clinical question in PICOT format.
 - P → Patient population
 - I → Intervention or Interest area
 - C → Comparison intervention or group
 - O → Outcome
 - T → Time (if relevant)

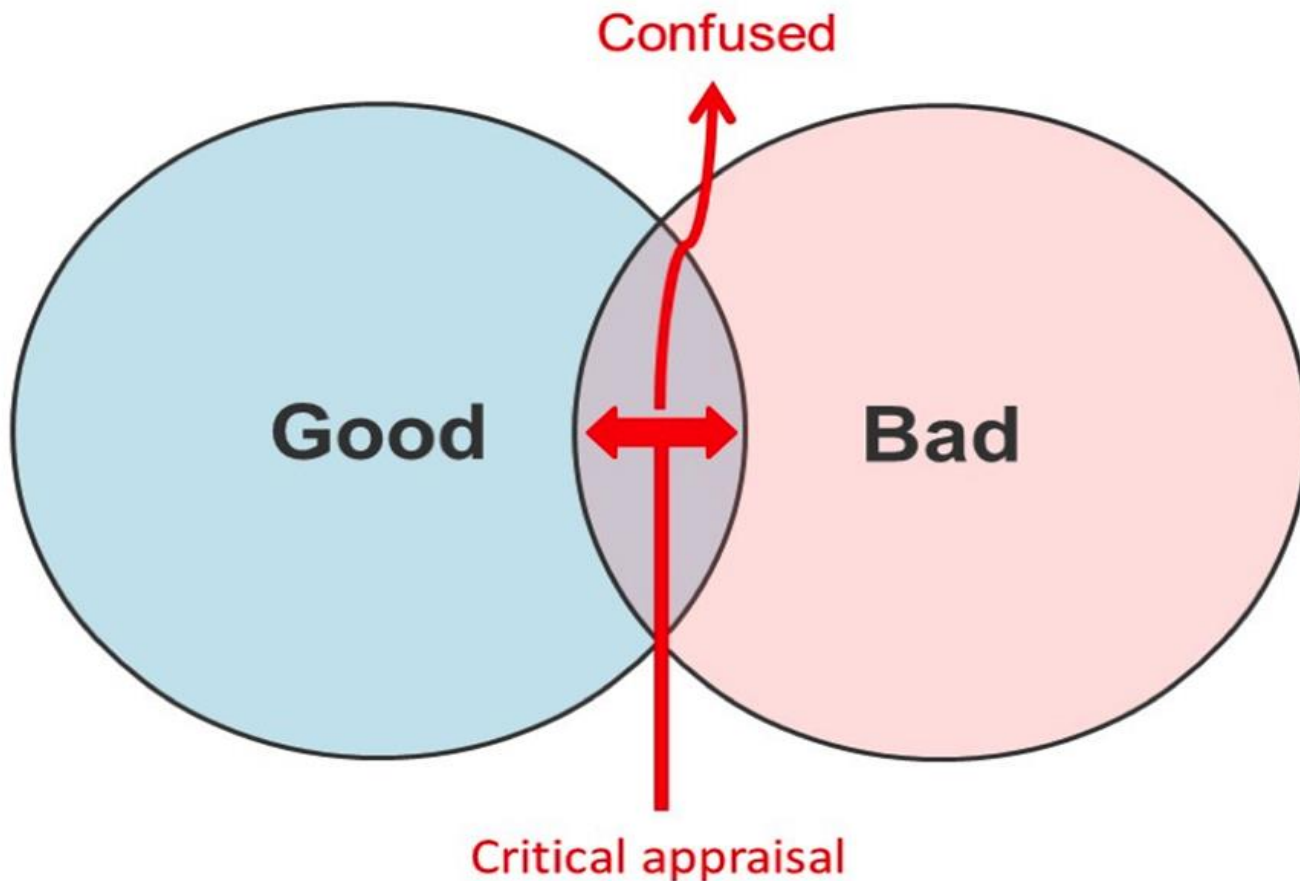
- For example:
- In hospitalized children (P), how does double-checking pediatric medications with a second nurse (I) compared to not double-checking (C) affect medication errors (O) during a 30-day time period (T)?

- **Step 2** = Search for and collect the most relevant best evidence
 - Cochrane Database of Systematic Reviews
 - Cochrane Central Register of Controlled Trials
 - PubMed
 - PubMed Central
 - Database of Abstracts of Reviews of Effects (DARE)
 - Ovid Clinical Queries
 - Google Scholar

- **Step 3** = Critically appraise the evidence (i.e., rapid critical appraisal, evaluation, synthesis, and recommendations).
 - Validity
 - Reliability
 - Applicability

Determining the quality of evidence can be difficult when it's not clearly good or bad

Types of Evidence



7 steps cont'd

- **Step 4** = Integrate the best evidence with one's clinical expertise and patient preferences and values in making a practice decision or change.
- **Step 5** = Evaluate outcomes of the practice decision or change based on evidence.
- **Step 6** = Disseminate the outcomes of the EBP decision or change.

Step by step example of implementation of EBP

Step 0

- **Inquiry :**
 - “Tina Magers, a nursing professional development and research coordinator at Mississippi Baptist Health Systems and her team wondered why catheter-associated urinary tract infections (CAUTIs) affect as many as 25% of all hospitalized patients.
 - She questioned what evidence exists that could inform a practice change to reduce these infections in their hospital.”

Step 1

- **Ask question in PICOT format:**
 - “In adult patients hospitalized in a long-term acute care hospital (P), how does the use of a nurse-driven protocol for evaluating the appropriateness of short-term urinary catheter continuation or removal (I) compared to no protocol (C) affect the number of catheter days and CAUTI rates (O) over a six-month post-intervention period (T)?”

Step 2

- **Search for evidence in literature**
 - The team conducted an evidence search to answer this clinical question using different data bases and websites as listed above.

Step 3

- **Critical appraisal of evidence**
 - This was followed by rapid critical appraisal of 15 studies found in the search.
 - A synthesis of the 15 studies led the team to conclude that early removal of urinary catheters would likely reduce catheter days and CAUTIs (the identified outcomes).

Step 4

- **Integration of evidence in practice**
 - Therefore, the team wrote a protocol based on the evidence, listing eight criteria for the continuation of a short-term urinary catheter.
 - The protocol was presented to the medical executive committee at their hospital for approval.
 - A process for the change was put into practice, including an education plan with an algorithm that was implemented in small group training for the nurses; posters, and written handouts for physicians.

Step 5

- **Evaluate outcomes**
 - An outcomes evaluation revealed a significant reduction in catheter days and a clinically significant reduction of 33% in CAUTIs.

Step 6

- **Disseminate outcome**
 - The team disseminated the outcomes of the project to internal audiences (e.g., their Nursing Quality Council, the EBP and Research Council, Nursing Leadership Council, Organization Infection Control Committee)
 - And to external audiences (presentations at regional conferences and a publication in the American Journal of Nursing) (Magers, 2013).

In summary....

Take home points

- Poor processes, not error-prone people, are the main cause of medical errors.
- Medical errors are the result of system and process failures
- Systematic changes in processes based on EBP significantly enhance patient safety and quality of care.
- Organizations that do systematic analyses of their systems and processes will be able to identify their weak points

- To understand what is needed to improve outcomes, health care organizations must
 - First identify the medical errors and problems that are occurring.
 - Examine the associated processes and systems.
 - Search and appraise the available evidence.
 - Rework the processes producing the poor outcomes via EBP.

Thank you

References

- Institute of Medicine. To err is human. National Academies Press, Washington, DC; 1999
- Institute of Medicine. Crossing the quality chasm. National Academies Press, Washington DC; 2001
- Chaiken BP, Holmquest DL. Patient safety: modifying processes to eliminate medical errors. Nursing outlook, 2003; 51(3): S21–S24
- Melnyk BM. Improving healthcare quality, patient outcomes, and costs with evidence-based practice: in Implementing evidence based practices (EBP) competencies in healthcare.

- Magers, T. (). Using evidence-based practice to reduce catheter-associated urinary tract infections. *American Journal of Nursing*, 2013; 113(6): 34–42.
- Braithwaite J. Harnessing implementation science to improve care quality and patient safety: a systematic review of targeted literature. *International journal of quality in healthcare* 2014
- Melnyk, B. M. (2014). Building cultures and environments that facilitate clinician behavior change to evidence-based practice: What works? *Worldviews on Evidence-Based Nursing*, 11(2), 79–80.

- Melnyk, B. M., & Fineout-Overholt, E. (2011). *Evidence-based practice in nursing & healthcare. A guide to best practice* (pp. 1–24). Philadelphia, PA: Wolters Kluwer/Lippincott Williams & Wilkins.