

Bringing Evidence-Based Practice to Life

1 Contact Hour

Course Expires: September 10, 2017

First Published: September 7, 2011

Updated: September 10, 2014

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Acknowledgments

RN.com acknowledges the valuable contributions of...

Bette Case Di Leonardi, PhD, RN-BC consults with AMN Healthcare and RN.com. She received her BSN Syracuse University and her MSN and PhD from Loyola University Chicago. A nurse since 1967, she served in a variety of clinical, administrative, and faculty roles. An independent consultant since 1993, she publishes and

presents on variety of topics. She is certified in Nursing Professional Development (NPD) and serves on the Content Expert Panel for NPD in the American Nurses Credentialing Center (ANCC) certification program. Dr. Case Di Leonardi is a member of the Editorial Board of the *Journal of Continuing Education in Nursing* and a board member of the National Board for Certification of Hospice and Palliative Nurses (NBCHPN).

...**Nadine Salmon, MSN, BSN, IBCLC** is the Clinical Content Manager for RN.com. She is a South African trained Registered Nurse, Midwife and International Board Certified Lactation Consultant. Nadine obtained an MSN at Grand Canyon University, with an emphasis on Nursing Leadership. Her clinical background is in Labor & Delivery and Postpartum nursing, and she has also worked in Medical Surgical Nursing and Home Health. Nadine has work experience in three countries, including the United States, the United Kingdom and South Africa. She worked for the international nurse division of American Mobile Healthcare, prior to joining the Education Team at RN.com. Nadine is the Lead Nurse Planner for RN.com and is responsible for all clinical aspects of course development. She updates course content to current standards, and develops new course materials for RN.com.

Purpose

The purpose of this continuing nursing education course is to provide healthcare professionals with information about evidence-based practice and how it applies in their practice settings.

The course includes:

- Definition of evidence-based practice
- The Iowa Model of Evidence-based Practice
- PICO questions to guide evidence-based projects
- Examples of evidence-based practice

Learning Objectives

After successful completion of this course, you will be able to:

1. Define evidence-based practice.
2. Explain the Iowa Model of Evidence-based Practice.
3. Explain how to search for credible evidence.
4. Explain the use of the PICO format for framing a clinical question.
5. Describe the role of the staff nurse in evidence-based practice.
6. Identify barriers to evidence-based practice.
7. Identify resources needed to implement evidence-based practice.
8. Give examples of evidence-based nursing practice.

Evidence-Based Practice: A High-Level Overview

Some may feel intimidated by the topic of evidence-based practice (EBP). Some associate the topic with complex, dense research articles laden with incomprehensible statistics.

EBP does involve research and the research process, but before exploring those details, it is important to view a bigger picture.

The purpose of EBP is to identify practices that research has shown to be effective and integrate those practices into patient care.

The law holds staff members accountable for adhering to the policies and procedures of the organizations in which they practice. The goal of EBP is to incorporate best practices, based upon credible research findings, into policy and procedure in a practical and cost-effective manner.

The purpose of EBP is to identify practices that research has shown to be effective and integrate those practices into patient care.

What is Evidence-Based Practice?

“Evidence-based practice (EBP) is the integration of valid and applicable patient-reported, nurse-observed, and research-derived information into the clinical setting. An EBP environment can make the difference between good care and excellence in care in today’s rapidly changing healthcare system. For EBP to be successful, its process must be integrated into everyday clinical practice.”

Hockenberry, Walden, Brown, & Barrera, 2007, p. 222.

EBP: A Centerpiece of Quality Care

Evidence-based practice guidelines, for aspects of care such as the prevention of central line infections, surgical site infections, and ventilator-associated pneumonia, as well as care for myocardial infarctions, served as the foundation for the successful 100,000 Lives Campaign launched by the Institute for Health Improvement in 2005 (Wachter & Pronovost, 2006).

EBP has produced improved patient outcomes and gained momentum as a critical component of patient safety and quality care.

The Pew Health Professions Commission identified the provision of evidence-based, competent care as one of 21 competencies needed for the 21st century (Bellack & O’Neill, 2000).

The Institute of Medicine [IOM], (2001) includes evidence-based decision-making as 1 of 10 guidelines for healthcare redesign.

The American Association of Colleges of Nursing (AACN, 2008) cites evidence-based nursing care as a hallmark of a good employer for new graduates.

The American Nurses Credentialing Center’s Magnet program established EBP as one of the criteria for recognizing hospitals that provide the very best in nursing care (2014).

The Iowa Model of Evidence-Based Practice

The Iowa Model was developed by Marita G. Titler, and her colleagues to describe knowledge transformation and to guide implementation of research into clinical practice (Dontje, 2007)

Key points of the Iowa Model include:

- New knowledge or a clinical problem triggers the EBP process.

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- If sufficient evidence supports a practice change, clinicians pilot the new practice.
- If the practice change is effective, clinicians assess its appropriateness, considering patient and family, staff, cost, environment, and any other relevant considerations.
- If sufficient evidence is lacking, clinicians conduct research.
- Clinicians introduce an evidence-based change into policy and practice systematically after careful investigation.

Steps in the Iowa Model of EBP

The first step in the Iowa Model of EBP is to identify either a problem-focused or a knowledge-focused trigger that will initiate the need for change. A problem-focused trigger could be a clinical problem, or a risk management issue; knowledge triggers might be new research findings or a new practice guideline.

Once the problem is identified, the second step is to review and critique relevant literature. If there is sufficient evidence to make a change in practice, the third step is to identify research evidence that supports the change in clinical practice.

The final steps are to implement a change in practice and monitor the outcomes.

Test Yourself

The Iowa Model of EBP is a:

- Model of how clinical practice should be delivered.
- Model to facilitate the implementation of research into clinical practice.
- Series of steps designed to change clinical practice based on current facility P&Ps.

The correct answer is: B. Model to facilitate the implementation of research into clinical practice.

Rationale: The Iowa Model was developed by Marita G. Titler, and her colleagues to describe knowledge transformation and to guide implementation of research into clinical practice (Dontje, 2007).

What is evidence?

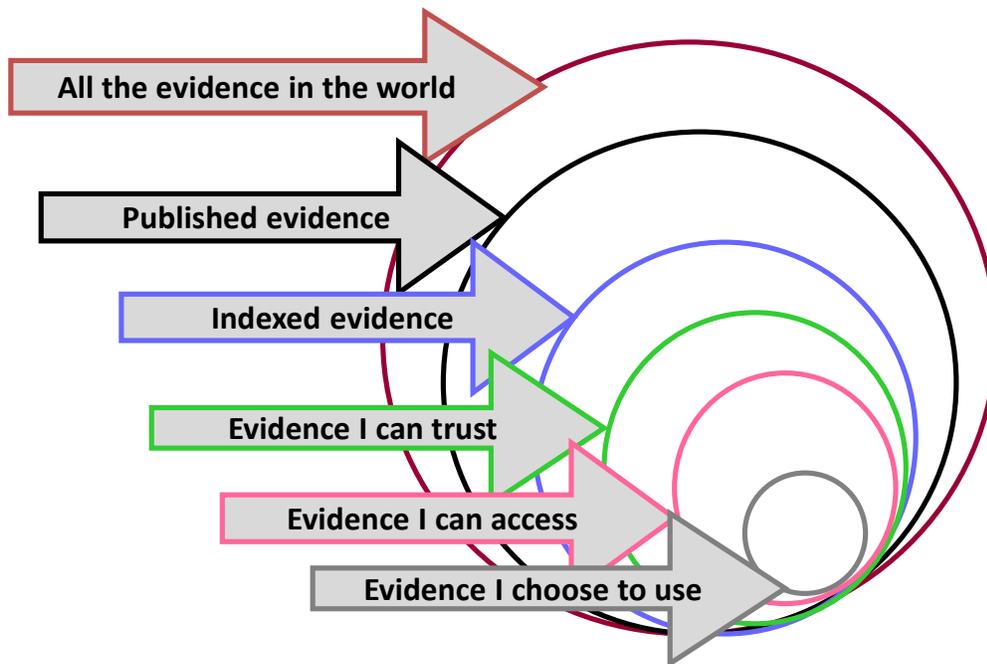
Clinicians can easily locate a wealth of published research findings, less rigorous case studies, and other clinical reports.

Only a small portion will be relevant to a particular clinical problem. Clinicians can locate pertinent evidence only when evidence is indexed. Clinicians can use keywords to search indexed evidence in Web-based databases.

Clinicians then must evaluate the evidence:

- Is it credible?
- Is it available in a form that I can use?
- Does it directly address my clinical question?

The Evidence



How to Find Evidence

Search Pertinent Databases

A librarian or nurse researcher can assist with database searches. Useful databases include:

- **Cumulative Index to Nursing and Allied Health Literature (CINAHL)**
 - CINAHL gives access to evidence-based care summaries. Individuals or organizations must purchase a subscription to CINAHL in order to use it. www.cinahl.com
- **PubMed**
 - PubMed at National Library of Medicine offers free access to medical journals which can complement the nursing focus in the CINAHL database. <http://www.ncbi.nlm.nih.gov/sites/entrez?db=pubmed>
- **The Cochrane Library**
 - The Cochrane Library offers systematic reviews of evidence related to specific interventions. Cochrane is a regularly updated subscription service. www.cochrane.org

Nurses may feel more confident asking colleagues and searching the Internet than they do using bibliographic databases (Pravikoff, Tanner, & Pierce, 2005, p. 40).

Test Yourself

A potential barrier to EBP is nurses' aversion to:

- A. Working collaboratively with others.
- B. Asking for assistance from the librarian.
- C. Using databases to search for literature.

The correct answer is: **C. Using databases to search for literature.**

Rationale: Nurses may feel more confident asking colleagues and searching the internet than they do using bibliographic databases (Pravikoss, Tanner, & Pierce, 2005, p. 40).

Search Using Databases

A Search Example

A nurse gathered evidence about the effectiveness of follow-up telephone calls by an Advanced Practice Nurse (APN) in managing blood glucose levels among adult Type 2 diabetic patients (Evans, 2010).

The nurse searched multiple databases:

- CINAHL
- DiabetesPro, professional resources online
- Educational Resource Information Center (ERIC)
- Health Source: Nursing/Academic Edition
- MEDLINE
- The Cochrane Library

Many nurses do not know about CINAHL, MEDLINE, the Cochrane Library and have never used those resources (Rolloff, 2010).

Search Using Keywords

A Search Example

To gather evidence about the effectiveness of follow-up telephone calls by an APN in managing blood glucose levels among adult Type 2 diabetic patients, the nurse searched databases using key words.

Note that combinations of keywords can be used to locate evidence that addresses more than one aspect of the clinical question.

Keywords used (Evans, 2010):

- ***Diabetes mellitus***
- ***Type 2 diabetes mellitus***
- ***Diabetes mellitus and follow-up interventions***
- ***Diabetes mellitus and follow-up interventions and advanced practice nursing***
- ***Diabetes mellitus and follow-up interventions and clinical nurse specialists***
- ***Diabetes mellitus and follow-up interventions and meta analysis***
- ***Diabetes mellitus and follow-up interventions and systematic reviews***
- ***Diabetes mellitus and follow-up phone call interventions***
- ***Diabetes mellitus and nursing education***

- *Diabetes mellitus and glucose control*
- *Diabetes mellitus and glucose control and advanced practice nursing*
- *Diabetes mellitus and glucose control and clinical nurse specialists*

What Evidence is Best?

The American Association of Critical Care Nurses (AACN) published an updated hierarchy of credibility of evidence.

- Level A is most credible.
- Level M is least credible.

The credibility of clinical practice guidelines is based upon the level of evidence which supports the guideline.

Center for Disease Control and Prevention (CDC) regularly updates evidence-based guidelines (O'Grady, et al., 2011).

The Agency for Healthcare Research and Quality (AHRQ) clinical practice guidelines identify the level of evidence upon which the guideline is based.

Test Yourself

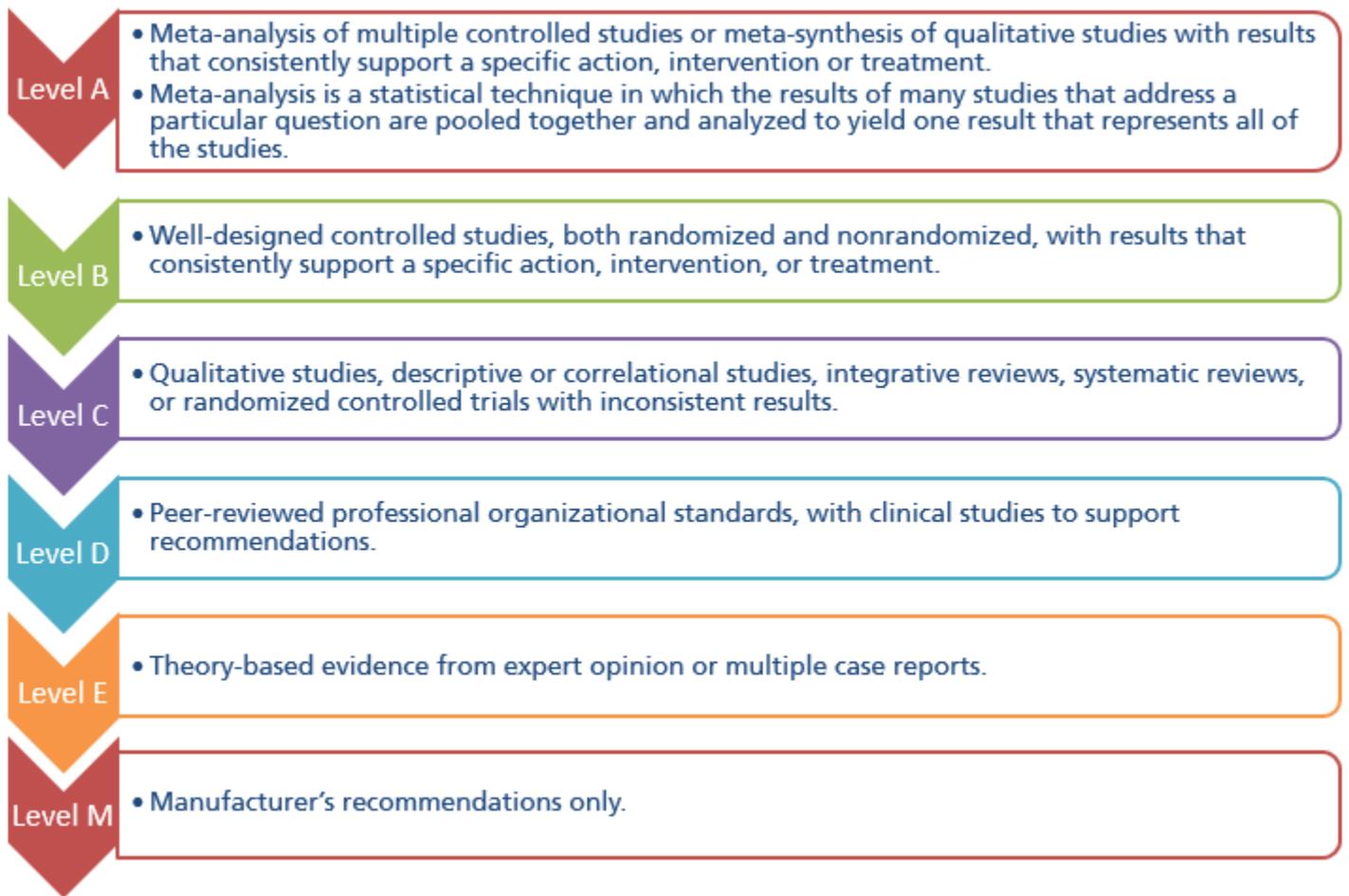
The most credible evidence is Level:

- A. A
- B. N
- C. M

The correct answer is: A.

Rationale: The American Association of Critical Care Nurses (AACN) published an updated hierarchy of credibility of evidence. Level A is most credible. Level M is least credible.

AACN's Evidence-Leveling System



Source of EBP Guidelines

You can review EBP guidelines by searching the websites of:

- The Centers for Disease Control and Prevention (www.cdc.gov)
- The Agency for Healthcare Research and Quality (www.ahrq.gov)
- Websites of many nursing, medical, and interdisciplinary professional specialty organizations.

Strong evidence supports most of these guidelines and bundles. Most of these guidelines may be safely implemented without further research, however, *ONLY guidelines in which your organization has incorporated into policy and procedure may be implemented in your organization.*

ONLY guidelines in which your organization has incorporated into policy and procedure may be implemented in your organization.

The EBP Process

The EBP process always begins with a clinical question.

Asking the right question is key to effective EBP because it leads to discovering pertinent evidence. A well-designed clinical question includes four parts, referred to as PICO (Sackett, Strauss, Richardson, Rosenberg, & Haynes, 2001).

- Patient Problem or Population
- Intervention
- Comparison
- Outcome(s)

Specific definition of each part of the PICO question focuses the search for pertinent evidence.

PICO is a question format that helps a clinician develop answerable and researchable questions (Koshar, n.d).

PICO: Patient Problem or Population

Patient problem or population identifies the specific characteristics of patients to whom the practice applies.

Questions to Clarify the “P” in PICO

- Who are the patients with whom you implement this practice?
- What are the **relevant characteristics of the patients**, such as age, disease condition, treatment protocol including medications, co-morbidities, race, and other characteristics?
- Which of these characteristics will you use to guide your search for evidence?

If you are considering a change in your unit’s protocol for pain management, what factors specific to your patients will guide your search for information?

Does the age of the patient make a difference?

Is the cause of the pain significant, such as cancer pain or post-surgical pain?

PICO: Intervention

The intervention clearly states the action taken to address the patient problem or improve care for the patient population.

The purpose of a PICO question is to guide your search for evidence.

You may intend to search the research literature for evidence of the effectiveness of **one particular intervention** with the patient problem or population you have selected.

Or, you may be looking for **combinations of interventions**.

Evidence for combinations of interventions have led to the development of evidence-based bundles such as the central line-associated bloodstream infection (CLABSI) prevention bundle (CDC, 2009).

PICO: Comparison

The comparison guides you to evidence of the effectiveness of an alternative to the intervention you are investigating.

The alternative may be present practice. If you are considering adopting the CDC CLABSI bundle, you might search for evidence of the CLABSI rate using the practices you are currently using. Your search in that case would include identifying the CLABSI rate in your unit.

You will need the baseline data about CLABSI rate using your current practices to **compare** with the CLABSI rate using the CDC bundle.

The alternative may be doing nothing. For example, a nurse investigated the effect on blood glucose control of adding a follow-up telephone intervention by an APRN as compared to standard treatment alone (Evans, 2010).

PICO: Outcome

The outcome is the intended result of the intervention.

What do you expect the intervention to accomplish?

- Earlier identification of complications?
- Improved pain control?
- Fewer patient falls?

The more specifically you can **describe the outcome**, the more successful you will be in locating pertinent literature and evaluating the evidence that you find.

To be more specific, *early identification of complications* might be further defined to mean the first 24 hours post-surgery and certain specific complications.

Test Yourself

Which PICO element is missing in the following question?

What is the effect on blood glucose control of adding a follow-up telephone intervention by an APRN as compared to standard treatment alone?

- A. Patient Problem or Population
- B. Intervention
- C. Comparison
- D. Outcome

The correct answer is: A. Patient Problem or Population.

Rationale: In this scenario, the patient problem or population is not defined. An example of a population would be adult patients with type 2 diabetes.

Role of the Staff Nurse in EBP: Clinical Problem

With or without a well-developed organizational EBP initiative, the staff nurse has a professional commitment to lifelong learning and patient advocacy.

The Iowa Model identifies 2 triggers for the EBP process:

- New knowledge
- Clinical problem

As lifelong learners, staff nurses continually encounter new knowledge of relevance to their patients. The conscientious nurse remains alert to clinical problems and encourages investigation into ways to improve patient outcomes.

For example, a post-anesthesia care unit (PACU) RN noticed that patients who required blood transfusions post-operatively to treat anemia were often patients who had donated their own blood for use pre-operatively. That observation led to an investigation of the relationship and ultimately a change in the timeframe for pre-operative blood donation.

Role of the Staff Nurse in EBP: New Knowledge

The staff nurse can play a variety of roles in EBP, a large extent depends upon the philosophy and resources of the practice setting.

At the most basic level, the nurse may identify:

- A clinical problem, or
- New knowledge in the literature, or in credible internet resources such as AHRQ and CDC.

The nurse might then bring the problem or the new information to the attention of the manager, the Clinical Nurse Specialist, or other resource person.

The resource person might then lead an EBP process to gather evidence related to the clinical problem, or determine the feasibility of incorporating the new knowledge into policy, procedure, and practice.

New knowledge can be put into practice **ONLY** as a pilot study or a policy change.

Regardless of the strength of the evidence to support a practice change, staff nurses are accountable for practicing within organizational policy and procedure.

Active Staff Nurse Roles in EBP

Many organizations, particularly Magnet hospitals (recognized by the American Nurse Credentialing Center for providing excellence in nursing care), have given priority to EBP and supplied resources to support it. Some organizations have initiated nurse researcher positions, or emphasized the EBP role of Clinical Nurse Specialists.

With a designated resource person to provide leadership and education, staff nurses may conduct literature searches, participate in journal clubs, plan pilot studies, gather data, draft policies and procedures, and educate peers about evidence-based policy changes (Staffileno & Carlson, 2010).

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Barriers to EBP

Barriers to EBP arise when nurses lack the ingredients that makes EBP come alive. EBP cannot flourish if nurses lack:

- Appreciation for the value of EBP.
- Knowledge and confidence to initiate or participate in EBP.
- Time to engage in activities other than direct patient care.
- Leadership and education to support EBP.
- Commitment from organizational leadership to provide necessary resources, including access to sources of evidence and assistance in using the information.

Resources Needed to Support EBP

Researchers have identified a lack of time as a major barrier to EBP (Walsh, 2010).

Organizations must commit resources to permit staff to participate in EBP and to use staff time efficiently.

A resource person who can search for evidence, narrow down relevant evidence, and guide the appropriate implementation steps can facilitate efficient use of staff time and other resources.

As the Iowa Model suggests, implementation steps may require further research, or may lead directly to incorporating solid evidence into policy and procedure.

University of Cincinnati Hospital Nursing Department and College of Nursing partnered to establish an Evidence-Based Practice Council (EBPC). The EBPC is an interdisciplinary council of 16 members including nurses, social workers, lactation consultant, and dietitians.

The EBPC offers staff development programs and EBPC member consultation to units and individual nurses. The nursing department adopted the Iowa Model, has integrated EBP into the clinical ladder program, and has dedicated substantial resources to EBP and EBP education (Whitmer, et al., 2011).

An Example of EBP

Nurse researchers developed an EBP guideline, *Exercise Promotion: Walking in Elders* (Jitramontree & Schoenfelder, 2010).

They used evidence accumulated in more than 70 published studies to create:

- Instructions for Older Adults Starting an Exercise Program for Exercise and Tips for Safety
- Assessment Tools and Criteria
- Interventions for Stages of Change toward Exercise
 - Precontemplation
 - Contemplation
 - Preparation
 - Action
 - Maintenance
 - Relapse

Facilitating Use of EBP

Nurse researchers found that a clinical decision support system was effective in reminding nurses to implement the evidence-based practice of 30° – 45° elevation of the head of the bed (HOB) for patients who are on ventilators. This EBP is a CDC recommendation to prevent aspiration and pneumonia.

The patient computer-based flowsheet prompted nurses to document HOB elevation every 4 hours. When the nurse documented less than 45°, a pop-up alert reminded of the EBP recommendation and presented a list of American Association of Critical Care Nurses (AACN) contraindications for HOB elevation from which to indicate why the HOB was elevated less than 45°.

HOB elevations were significantly improved at 1 month and 5 months after introducing the clinical decision support system reminder.

Supportive Evidence for Bundled Interventions: VAP

A study that included 112 ICUs found a dramatic decrease in rates of ventilator-associated pneumonia (VAP) associated with consistent implementation of the 5 therapies in the VAP bundle.

Researchers first introduced interventions to improve safety culture and communication. Compliance with evidence-based therapies increased from 32% at baseline to 75% at 16-18 months after implementation and 84% at 28-30 months after implementation.

Consistent use of the VAP bundle resulted in substantial (up to 71%) and sustained (up to 2.5 years) decrease in VAP rates. (Berenholtz, et al., 2011).

Supportive Evidence for Bundled Interventions: CLABSI

In 2008, all 18 regional referral NICUs in New York State adopted central-line insertion and maintenance bundles. They agreed to use checklists to monitor maintenance-bundle adherence and report checklist use.

Each study period included more than 55,000 central-line days and more than 200,000 patient-days. CLABSI rates decreased 67% statewide. Increased checklist-use rate was associated with decreased CLABSI rate (Schulman, et al., 2011).

Five Steps to Actualizing EBP

Thew (2011) suggests that EBP becomes more achievable when approached in 5 simple steps:

1. Question Everything. Alert yourself to clinical questions. Look for better ways. Formulate PICO questions.
2. Go to the Literature. Obtain assistance from medical librarians, nurse researchers, clinical nurse specialists, or other resource persons.
3. Validate the Evidence. Use resource persons to establish the credibility of the evidence.
4. Apply the Science. Create a project to test the practice in your setting. If effective, update policy and procedure.
5. Take a New Look. Measure the outcomes. Search for new aspects of practice to address with EBP.

This emphasizes the need for supportive resources in steps 2 and 3 in order to reserve clinicians' time, energy, and enthusiasm for steps 1,4, and 5.

Conclusion

In this course, you learned:

- The definition of evidence-based practice (EBP) and the elements of the Iowa Model of EBP.
- How to search for credible evidence.
- How to use of the PICO format for framing a clinical question.
- The role of the staff nurse in EBP.
- Barriers to EBP.
- Resources needed to implement evidence-based practice.
- Some examples of EBP.

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Resources

Research Sources

- PubMed: <http://www.pubmed.gov>
-Access to PubMed is free of charge.
- Cumulative Index to Nursing and Allied Health Literature: <http://www.cinahl.com>
-CINAHL is a subscription service to which many medical and healthcare-related libraries subscribe.
- The Cochrane Collaboration: <http://www.cochrane.org>
-Many reviews are available at no charge.

- American College of Physicians Journal Club: <https://www.acpjg.acponline.org>
-Some reviews are available at no charge.
- Google Scholar: <http://www.scholar.google.com>
-Enter a question (PICO format will give most focused results).

Books and Journals

- *Evidence-Based Nursing*, an online journal published quarterly in the UK: <http://www.ebn.bmj.com>
- *AHRQ Patient Safety and Quality: An Evidence-Based Handbook for Nurses*. 1408 pp. Collection of chapters. May be downloaded free of charge from <http://www.ahrq/quality/nursesfdbk>
- *Worldviews on Evidence-Based Nursing*, an online journal published by Sigma Theta Tau International. Wiley's online library also permits searches for articles and other resources. <http://onlinelibrary.wiley.com>
- Many nursing journals, including the *Journal for Nurses in Staff Development*, feature evidence-based practice as an ongoing column. *The American Journal of Nursing* published a series: "Evidence-based Practice, Step by Step."

Organizations

Nursing specialty organizations, such as the American Association of Critical Care Nurses (AACN), have an evidence-based practice section of their websites. AACN offers CINAHL searching at the AACN website as a benefit of membership.

Evidence-based practice centers are located within a number of schools of nursing, such as the University of Iowa, the University of Texas Health Science Center at San Antonio, Arizona State University, and others. These centers offer educational seminars and materials related to evidence-based practice.

The Joanna Briggs Institute, a not-for-profit organization based in Australia, offers numerous resources to support evidence-based practice. <http://www.ioannabriggs.edu.au>

Some organizations have created tutorials on the topic of evidence-based practice:

- Introduction to Evidence-based Practice from Duke University
<http://www.hsl.edu/services/tutorials/ebm/index.htm>
- Introduction from Centre for Evidence-based Medicine Toronto
<http://www.ktclearinghouse.ca.cebm/syllabi/nursing/intro>
- Evidence-based Nursing Guides & Tools from McGill University Health Centre
http://www.muhc-ebn.mcgill.ca/EBN_tools.htm

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