

# Pinpointing Evidence-Based Information: How to Find the Needle in the Information Haystack

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## OBJECTIVES

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- To understand the foundations of evidence-based practice and how EBP relates to nursing practice.
- To develop an understanding of the information resources available to nurses through the Web, handheld devices, and electronic health records.
- To understand the different study designs and their relationship to the evidence pyramid.

## Introduction

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Practicing financial management without evidence is like doing surgery blindfolded. So, do not skip this chapter. This is an important one.

Much of health care, both in clinical practice and financial management, is practiced without evidence. John E. Wennberg (2010) in his book *Tracking Medicine* describes how clinical procedures are performed across the United States with no rhyme or reason. Wennberg found that communities with similar demographics had highly variant surgical rates. The only reason for the differences was physician preference. Wennberg developed the *Dartmouth Atlas of Health Care* (<http://www.dartmouthatlas.org>), which details the distribution of health services across the United States.

The PBS program entitled *The Good News in American Medicine*, produced by T. R. Reid, highlighted Wennberg's work. Reid, a journalist with the *Washington Post*, is known for another PBS program, *Sick Around the World*, which described health care in five wealthy nations around the world (France, Germany, Japan, the United Kingdom, and Canada). The program, along with Reid's bestselling book, *The Healing of America*, points out that all five of these countries provided universal health care at about *half* the cost of healthcare in the United States (Palfreman & Reid, 2008; Reid, 2010). The key to cutting costs is that they spend a small fraction of healthcare costs on financial administration compared to the United States. In Wennberg's work detailing unnecessary clinical procedures, and Reid's book describing the efficiency of healthcare practices in other wealthy countries, evidence plays a major role.

When we searched a major nursing literature database on the terms *finances* or *costs*, limited the results to the years 2010–2012, and limited the publication type to *systematic review*—a very high level of evidence (more on publication types later)—we received a return of 185 abstracts of journal articles. Titles from the search results included:

“Quality of Life and Economic Costs Associated with Post-Thrombotic Syndrome”

“Incident and Costs of Corticosteroids-Associated Adverse Events”

“Midlevel Health Providers Impact on ICU Length of Stay, Patient Satisfaction, Mortality, and Resource Utilization”

“Costs of Hospital-Acquired Infection and Transferability of the Estimates”

“Economic Evaluation of Nurse Staffing and Nurse Substitution in Health Care”

“Hospital Nurse Staffing Models and Patient and Staff-Related Outcomes”

In the journal article “Health Care in Crisis! Can Nurse Executives' Beliefs About and Implementation of Evidence Based Practice Be Key Solutions in Health Care Reform?” Sredl and associates (2011) revealed how evidence is used in practice by nurses:

In the nursing milieu, rife with change, perhaps the most significant change encountered by the nursing profession in the last decade is EBP [evidence-based practice]. . . . Studies have indicated that its use improves the quality of care and patient care and lowers health care costs. . . . For the Institute of Medicine's goal that 90% of health care decisions be evidence based by 2020, health care institutions must provide their staff with appropriate resources to create a culture that creates evidence-based care.

There is little published evidence that CNEs (Chief Nursing Executives) actually value and understand, much less use, EBP. When CNEs fully understand, believe in, and implement EBP, they can be in a position to mentor their staff so that they also understand, believe in, and implement EBP to improve the quality of health care and patient outcomes as well as help to lower health care costs. (pp. 73–74, 78)

What exactly is evidence-based practice? The classic definition is derived from David Sackett's 1996 definition of evidence-based medicine as "The conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients" (Sackett, et al., 1996, p. 72).

The problem is that much of healthcare practice is based on tradition, the local environments, clinical preferences, and factors *other than* the best scientific literature that exists for a clinical practice. Clinicians do not use the evidence for several reasons: too much evidence exists, they do not have access to new evidence, it is time-consuming, they have never been instructed to find evidence, and they are uncertain about assessing the strength and quality of one piece of evidence versus another. We hope that through this chapter, readers embark on the pathway of becoming *information masters* and overcome the aforementioned barriers of using evidence.

Some points need to be highlighted to clarify Sackett's definition. It in no way excludes the clinician's experience or the patient's preferences. As a matter of fact, evidence-based practice encourages the integration of best evidence, clinical experience, and patient preferences. The definition states the need to use the best evidence available. It does not say each decision must be supported by a meta-analysis. Often there is not a higher level of evidence for a particular problem, so clinicians have to use the highest level available based on the hierarchy of evidence, which we cover later.

It is important to note that even though evidence-based practice leads to a reduction in cost and an improvement in morbidity and mortality, nurses do not always follow best practice. This is where nurse managers can play a crucial role. Nurse managers have been found to be more confident evidence users. This confidence would be put to good use if they would serve as evidence-based practice mentors for other nurses in the organization. For evidence-based practice to succeed, nurse managers need to help provide an organizational culture that supports it (Melnyk et al., 2012).

A practical way to implement evidence-based practice is by using a framework commonly referred to as the *five A's*, which are assess, ask, acquire, appraise, and apply.

## Assess

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Assessment is routine in the clinic. What is the diagnosis of this patient? What therapy should the person receive? Assessment is also part of the financial management role of nurse managers. How much will this procedure cost? How can we improve clinical outcomes of patients and reduce costs or hold costs steady?

## Ask

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The ongoing, even unconscious, process of assessment naturally leads to asking questions. A hallmark of being a professional is to be curious. No matter how well we apply ourselves in our education, we have gaps in our knowledge. A mnemonic device was created to help people focus their clinical questions. A focused clinical question is much more answerable than an unfocused one is.

*PICO* represents the patient/population/problem, intervention being considered, comparative/contrasting intervention being considered, and outcomes(s) of interest. Consider the following:

**(P) Patient/population/problem:** What is the patient population of interest? *Be specific.* If it is a clinical question, the P might be elderly patients in nursing homes with urinary tract infections

(UTIs) as opposed to just UTI patients. If it is a managerial question, an example of the P is “hospital nursing staffs where staff morale is a problem.”

**(I) Intervention:** The intervention is the primary course of action that seems plausible as a solution to the problem.

**(C) Comparative intervention:** The comparative intervention is an alternative solution to the problem that is causing uncertainty in the decision-making process. More than one comparative intervention may exist. Examples of intervention/comparative interventions for the morale problem are as follows:

- a. Intervention—setting staff work time to 8-hour shifts.
- b. Comparative intervention 1—setting staff work time to 12-hour shifts.
- c. Comparative intervention 2—having options to work an 8-hour shift or a 12-hour shift.

At this point, this question could be feathered out into multiple questions. Realizing that one question might actually be several questions is an advantage of using the PICO process. For example, the I and C could be increased wages versus no increased wages, better benefits versus maintaining current benefits, or morale-building exercises versus no exercises.

**(O) Outcome(s):** This part is the most important component of the question-asking process. In the preceding nurse staffing example, the desired outcome is improved morale. When possible, the outcome should be *SMART*: specific, measureable, achievable, realistic, and timely. Questions should be focused on specific outcomes that can lead to improvements in clinical outcomes, costs, patient satisfaction, and employee growth.

However, the PICO process only works with *foreground questions*. Foreground questions are practice or management questions in which there is indecision between two or more options. *Background questions*, in contrast, are questions that are fact based, such as the incidence of breast cancer in women aged 20 to 30 years.

Examples of PICO:

- P: In nursing home patients
- I: Supervised exercise programs
- C: Bed exit alarm
- O: Decrease in falls

*Resultant question:* In nursing home patients, do supervised exercise programs versus a bed exit alarm lead to a decrease in falls?

- P: In registered nurses
- I: Team-building exercises
- C: No team-building exercise
- O: Increased job satisfaction

*Resultant question:* In registered nurses, do team-building exercises lead to increased job satisfaction?

**Exhibit 5–1**, Clinical Question Worksheet, can be helpful in deciding on a question to ask. In addition, the University of Minnesota Libraries has an excellent guide to the PICO process, “Evidence Based Practice: An Interprofessional Tutorial” (<http://hsl.lib.umn.edu/learn/ebp/>).

Exhibit 5-1 Clinical Question Worksheet					
The Clinical Question & Information Resources Construct your question					
Patient, Population or Problem	Intervention, Prognostic Factor, Exposure	Comparison Intervention (if appropriate)	Outcome you would like to measure or achieve	Type of question you are asking	Type of study you would want to find
How would I describe a group of patients similar to mine?	Which main intervention, exposure, prognostic factor am I considering?	What is the main alternative to compare with the intervention?	What can I hope to accomplish, improve, affect?	How would I categorize the question?	What would be the best study design in order to answer this question?
Source: Adapted from <a href="http://eno.duhs.duke.edu/sites/eno.duhs.duke.edu/files/public/guides/pico-worksh.pdf">http://eno.duhs.duke.edu/sites/eno.duhs.duke.edu/files/public/guides/pico-worksh.pdf</a>					

## Acquire

The acquisition of the appropriate evidence resources is the next step in the evidence-based practice cycle. As you are searching for evidence, it is imperative to remember that unless you are writing an exhaustive systematic review, you need to find just enough evidence to answer your question. It is very easy to get lost in the maze of resources, so we give you some tools to guide your way. Resources may be primary or secondary. *Primary resources* are original research such as individual journal articles. *Secondary literature* is multiple primary resources combined into a new unit such as a systematic review or a meta-analysis. Many secondary resources can be used on a smartphone or tablet at the point of care.

**Exhibit 5-2**, Evidence Ratings and Grade of Recommendations, is a useful tool for evaluating evidence. It breaks down evidence into research levels and grades recommendations based on these levels.

One important concept to consider when acquiring evidence is that all evidence is not created equal. Different study types exist that can be placed in a hierarchy according to the strength of the evidence. This hierarchy is commonly referred to as the evidence pyramid (**Exhibit 5-3**). The most common study types are systematic reviews, meta-analyses, randomized controlled trials, cohort studies, case-control studies, cross-sectional studies, case series, and case studies. You should have a basic knowledge of the types of studies, how each one is designed, when each one is appropriate, and which ones yield the strongest evidence.

**Systematic reviews:** Systematic reviews are covered later.

**Meta-analyses:** A *meta-analysis* is a mathematical process in which the statistical results of several similar studies are combined. Often, studies have small sample sizes, which reduces their power. Power is a statistical concept. A low-powered study may not have statistical significance.

**Randomized controlled trials (RCTs):** A *randomized controlled trial* is a type of individual study in which the researcher carefully controls the subjects in the trial and the exposures the subjects receive. It is an experimental design and is considered high-level evidence. The higher *levels of evidence (LOE)* produce the more trustworthy results. Of course, at any evidence level for this to be true the study must be well designed and well executed with attention to potential bias, sample size, and other methodological issues. We cover critical appraisal later.

**Exhibit 5–2 Evidence Ratings and Grade of Recommendations from the Oxford Centre for Evidence-Based Medicine**
**Oxford Centre for Evidence-Based Medicine—Levels of Evidence (March 2009)**

What are we to do when the irresistible force of the need to offer clinical advice meets with the immovable object of flawed evidence? All we can do is our best: Give the advice, but alert the advisees to the flaws in the evidence on which it is based.

The CEBM ‘Levels of Evidence’ document sets out one approach to systematising this process for different question types.

Level	Therapy/ Prevention, Aetiology/ Harm	Prognosis	Diagnosis	Differential diagnosis/ symptom prevalence study	Economic and decision analyses
1a	SR (with homogeneity*) of RCTs	SR (with homogeneity*) of inception cohort studies; CDR” validated in different populations	SR (with homogeneity*) of Level 1 diagnostic studies; CDR” with 1b studies from different clinical centres	SR (with homogeneity*) of prospective cohort studies	SR (with homogeneity*) of Level 1 economic studies
1b	Individual RCT (with narrow confidence interval”);	Individual inception cohort study with >80% follow-up; CDR” validated in a single population	Validating** cohort study with good” “ ” reference standards; or CDR” tested within one clinical centre	Prospective cohort study with good follow-up****	Analysis based on clinically sensible costs or alternatives; systematic review(s) of the evidence; and including multi-way sensitivity analyses
1c	All or none§	All or none case-series	Absolute SpPins and SnNouts“ ”	All or none case-series	Absolute better-value or worse-value analyses “ ” “ ”
2a	SR (with homogeneity*) of cohort studies	SR (with homogeneity*) of either retrospective cohort studies or untreated control groups in RCTs	SR (with homogeneity*) of Level >2 diagnostic studies	SR (with homogeneity*) of 2b and better studies	SR (with homogeneity*) of Level >2 economic studies
2b	Individual cohort study (including low quality RCT; e.g., <80% follow-up)	Retrospective cohort study or follow-up of untreated control patients in an RCT; derivation of CDR” or validated on split-sample§§§ only	Exploratory** cohort study with good” “ ” reference standards; CDR” after derivation, or validated only on split-sample§§§ or databases	Retrospective cohort study, or poor follow-up	Analysis based on clinically sensible costs or alternatives; limited review(s) of the evidence, or single studies; and including multi-way sensitivity analyses

Level	Therapy/ Prevention, Aetiology/ Harm	Prognosis	Diagnosis	Differential diagnosis / symptom prevalence study	Economic and decision analyses
2c	“Outcomes” research; ecological studies	“Outcomes” research		Ecological studies	Audit or outcomes research
3a	SR (with homogeneity*) of case-control studies		SR (with homo- geneity*) of 3b and better studies	SR (with homo- geneity*) of 3b and better studies	SR (with homo- geneity*) of 3b and better studies
3b	Individual case- control study		Non- consecutive study; or with- out consistently applied refer- ence standards	Non- consecutive cohort study, or very limited population	Analysis based on limited alternatives or costs, poor quality esti- mates of data, but includ- ing sensitiv- ity analyses incorporating clinically sensible variations.
4	Case-series (and poor qual- ity cohort and case-control studies§§)	Case-series (and poor quality prog- nostic cohort studies***)	Case-control study, poor or non- independent reference standard	Case-series or super- seded reference standards	Analysis with no sensitivity analysis
5	Expert opinion without explicit critical appraisal, or based on physiology, bench research or “first principles”	Expert opinion without explicit critical appraisal, or based on physiolo- gy, bench research or “first principles”	Expert opinion without explicit critical appraisal, or based on physi- ology, bench research or “first principles”	Expert opin- ion without explicit criti- cal appraisal, or based on physiology, bench research or “first principles”	Expert opinion without explicit critical appraisal, or based on economic theory or “first principles”

Produced by Bob Phillips, Chris Ball, Dave Sackett, Doug Badenoch, Sharon Straus, Brian Haynes, Martin Dawes since November 1998. Updated by Jeremy Howick March 2009.

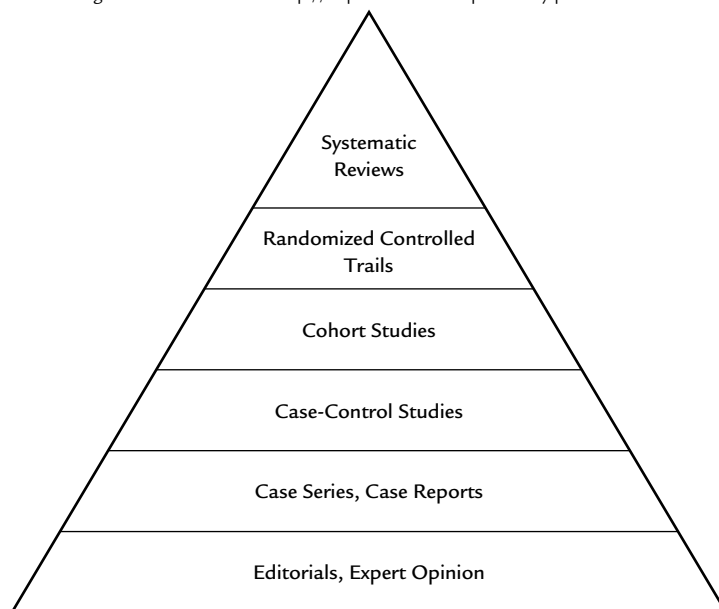
#### Grades of Recommendation

- |   |  |
|---|--|
| A | consistent level 1 studies   |
| B | consistent level 2 or 3 studies <b>or</b> extrapolations from level 1 studies            |
| C | level 4 studies <b>or</b> extrapolations from level 2 or 3 studies                       |
| D | level 5 evidence <b>or</b> troublingly inconsistent or inconclusive studies of any level |

Source: From <http://www.cebm.net/index.aspx?o=1025>

**Exhibit 5-3 Evidence Pyramid**

Evidence-Based Practice in the Health Sciences, Information Services Department, Library of the Health Sciences-Chicago, University of Illinois at Chicago. Available online at: <http://ebp.lib.uic.edu>. Reprinted by permission.



Source: Adapted from <http://ebp.lib.uic.edu/nursing/node/12>

An example of an RCT is to take a group of nurses and keep them on their current rotation. Take a similar group of nurses and put them on a new rotation system in which you hypothesize their morale and productivity will increase. You use a validated survey instrument to measure the results after a period of time. An example of a RCT like this is “Evaluation of an Open-Rota System in a Danish Psychiatric Hospital: A Mechanism for Improving Job Satisfaction and Work-Life Balance” (Pryce, Albertson, & Nielsen, 2006).

**Cohort studies:** A *cohort study*, as are all the remaining studies discussed, is an observational study. A cohort study is a prospective study that starts with two groups, one exposed to the study area of interest, and the other not. Both groups are followed over time and outcomes are recorded and compared between the two groups. The researcher does not control the exposure.

Turnover is a costly problem. A hospital could track all new RNs hired over a 5-year period. They might do a survey at the point of hiring to gain basic demographic information of interest and one at the point any of the newly hired RNs leave during the 5-year study period. The exit interview could inquire into the reasons the RN left, such as management issues, salary, family issues, hours, and problems with coworkers. The data could be analyzed to determine why RNs left. An example of a cohort study done on this topic is “Turnover of New Graduate Nurses in Their First Job Using Survival Analysis” (Cho, Lee, Mark, & Yun, 2012).

**Case-control studies:** A *case-control study* is a retrospective study. It looks back in time. The researchers start with people who already have the outcome of interest. They then look for exposures that led to the outcome by using medical records, surveys, phone interviews, personnel records, and



so forth. The cases are matched to controls who are similar to the cases but do not have the outcome of interest.

A case-control study could be performed on a group of clinics experiencing major financial problems with “no-shows.” A group of no-shows is identified from the past 2 years. These patients are interviewed to discover the reasons for missing an appointment. A similar group of patients who made their appointments is also identified. The two groups are chosen so that they are demographically similar. The control group is also interviewed. Factors examined in the structured interview include transportation, work status, and others. Both groups are then analyzed and compared to determine underlying causes of nonattendance. An example of a case-control study similar to this is “Reasons for Non-Attendance: Audit Findings from a Nurse-Led Clinic” (Wilkinson & Daly, 2012).

**Cross-sectional studies:** A *cross-sectional study* looks at exposures and outcomes at one point in time. It is useful for exploring research ideas, but not in determining causality. Suppose we obtained the names and addresses of all RNs in a three-county region. They are all surveyed in regard to exposures—work satisfaction, stress, coworker conflicts, pay satisfaction, and so forth—and outcomes—current work status, number of job changes in the last 5 years. The data are then analyzed for correlation among the various factors.

In the study “Hospital and Unit Characteristics Associated with Nursing Turnovers Include Skill Mix but Not Staffing Level: An Observational Cross-Sectional Study” (Staggs & Dunton, 2012), data on RN and total nursing staff turnover were analyzed with factors such as Magnet status and location to see if any correlation existed.

**Case series:** A *case series* uses data from several individual cases. An example is gathering information about cases in which a nurse implemented a course of action that saved money. Five such scenarios could be described in one research study.

**Case studies:** Although *case studies* are a popular study type, they rank on the bottom level of the evidence pyramid. However, this does not mean they are not valuable. In management, the case study is a time-honored methodology. Case studies are featured in the *Harvard Business Review* and used for examples in training. The case study “Improving Nurse Retention in a Large Tertiary Acute Care Hospital” (Hinson & Spatz, 2011) describes how “5 change consults . . . resulted in a 91% reduction in voluntary nurse turnover, yielding a savings of \$655, 949” (p. 103).

All the study types described here can be searched in the large citation databases PubMed and CINAHL. PubMed (**Exhibit 5-4**) is free and is produced by the U.S. government. CINAHL is proprietary.

Haynes developed a five Ss description of evidence resources: systems, summaries, syntheses, synopses, and studies (Haynes, 2006, p. A8). The five Ss description can also be organized into a strong to weak hierarchy, like the methodology pyramid (**Exhibit 5-5**).

**Systems:** *Systems* are evidence resources that are incorporated into the *electronic health record (EHR)*. They are mapped to a subject vocabulary in the EHR such as International Classification of Diseases (ICD) codes and are automatically retrieved and placed in the patient’s record by the system.

**Summaries:** *Summaries* are reviews such as the Cochrane Database of Systematic Reviews (<http://www.thecochranelibrary.com>). Large numbers of studies on a topic are collected and then accepted or rejected based on predetermined inclusion/exclusion criteria. The included studies are analyzed and then synthesized into a focused answer to a clinical question. The Cochrane Database of Systematic Reviews at the Cochrane site provides just the summary, but that usually yields adequate information. The full Cochrane Database of Systematic Reviews (**Exhibit 5-6**) can be purchased through OVID, EBSCO, or John Wiley and Sons.

## Exhibit 5-4 PubMed Database

NCBI Resources How To My NCBI Sign In

PubMed.gov  
US National Library of Medicine  
National Institutes of Health

PubMed [ ("Financial Management" [Mesh] AND "Nursing Administration Research" [Mesh]) ] Search

RSS Save search Advanced Help

Choose additional filters

Text availability  
Abstract available  
Free full text available  
Full text available

Publication dates  
5 years  
10 years  
Custom range...

Species  
Humans

Article types  
Clinical Trial  
Review  
Systematic Reviews  
more ...

Languages  
English  
more ...

Clear all

Choose additional filters

Display Settings: Summary, 20 per page, Sorted by Recently Added

Send to: Filters: Manage Filters

Results: 1 to 20 of 83

1. Preventing heel pressure ulcers: economic and legal implications.  
Lyder CH  
Nurs Manage. 2011 Nov;42(11):18-9. Review. No abstract available.  
PMID: 22037367 [PubMed - indexed for MEDLINE]  
[Related citations](#)

2. Effects of outsourced nursing on quality outcomes in long-term acute-care hospitals.  
Alvarez MR, Kerr BJ Jr, Burtner J, Ledlow G, Fulton LV.  
J Nurs Adm. 2011 Mar;41(3):138-43.  
PMID: 21336842 [PubMed - indexed for MEDLINE]  
[Related citations](#)

3. Use of outsourced nurses in long-term acute care hospitals: outcomes and leadership preferences.  
Alvarez MR, Kerr BJ Jr, Burtner J, Ledlow G, Fulton LV.  
J Nurs Adm. 2011 Feb;41(2):90-6.  
PMID: 21266588 [PubMed - indexed for MEDLINE]  
[Related citations](#)

4. Work-related burnout, job satisfaction, intent to leave, and nurse-assessed quality of care among travel nurses.  
Faller MS, Gates MC, Georges JM, Connelly CD.  
J Nurs Adm. 2011 Feb;41(2):71-7.  
PMID: 21266585 [PubMed - indexed for MEDLINE]  
[Related citations](#)

5. The association of shift-level nurse staffing with adverse patient events.  
Patrician PA, Loan L, McCarthy M, Fridman M, Donaldson N, Bingham M, Brosch LR.  
J Nurs Adm. 2011 Feb;41(2):64-70.  
PMID: 21266584 [PubMed - indexed for MEDLINE]  
[Related citations](#)

3 free full-text articles in PubMed Central  
Complex home care: Part 2: family annual income, insurance premium, et [Nurs Econ. 2010]  
Nurs staffing and medication errors: cross-sectional or longitudinal r [Res Nurs Health. 2009]  
[Review](#) Economics of nursing [Policy Polit Nurs Pract. 2008]  
See all (3).

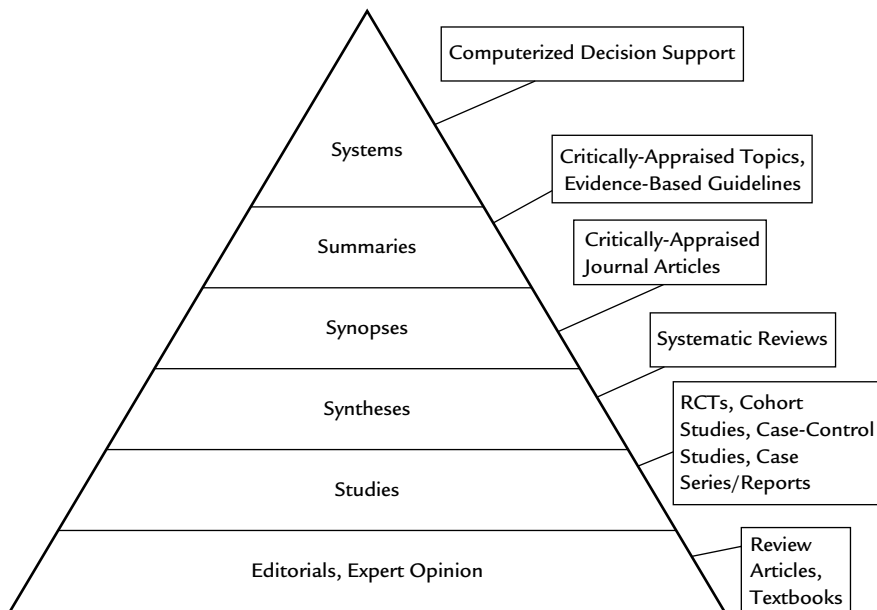
Find related data  
Database: [Select]  
[Find Items](#)

Search details  
\*"Financial Management" [Mesh]  
AND "Nursing Administration Research" [Mesh]  
[Search](#) See more...

Recent activity  
Q ("Financial Management" [Mesh]) AND "Nursing Administration Resear... (83) PubMed  
[See more...](#)

Source: From [www.pubmed.gov](http://www.pubmed.gov)

## Exhibit 5-5 The 5S Pyramid



Source: From <http://guides.library.upenn.edu/content.php?pid=192036&sid=1610308>

## Exhibit 5–6 Cochrane Systematic Reviews Summaries

The screenshot displays the Cochrane Summaries website interface. At the top, there are language options (English, Français, Deutsch, Español) and a link to the Cochrane Library. A search bar contains the text "Enter term(s) like 'headache' 'aspirin' 'exercise'". Below the search bar, the title of the review is "Hospital nurse staffing models and patient and staff-related outcomes". The authors listed are Butler M, Collins R, Drennan J, Halligan P, O'Mahúna DP, Schultz TJ, Sheridan A, Vilis E. The publication date is July 6, 2011. The main text of the abstract discusses the introduction of new staffing models in response to shortages of qualified nurses and the mix of qualified and unqualified nurses. It mentions that 15 relevant studies were identified. The background section notes that nurse staffing interventions have been introduced across countries in response to changing patient requirements and shortages of qualified nursing staff. The objectives section states that the aim was to explore the effect of hospital nurse staffing models on patient and staff-related outcomes. The source is cited as "From http://www.cochrane.org/cochrane-reviews".

Another way to search systematic reviews is through PubMed Health ([www.ncbi.nlm.nih.gov/pubmed-health](http://www.ncbi.nlm.nih.gov/pubmed-health)). PubMed Health searches 20,000 systematic reviews, including those in the Cochrane Database of Systematic Reviews and Database of Abstracts of Reviews of Effects (DARE). The large citation databases PubMed and CINAHL can be limited to systematic reviews when searched. In PubMed, users can specify the limits on the left side bar, choose *Article Type*, and then find *Systematic Reviews*. **Exhibit 5–7** shows PubMed results using the systematic review filter. In CINAHL, in the limits section, users can select *Publication Type* in the drop-down menu and choose *Systematic Reviews*.

**Syntheses:** *Syntheses* are referred to as *critically appraised topics (CATs)*. Products that fit into this category are Dynamed (<http://dynamed.ebscohost.com/>), Clinical Evidence (<http://clinicalevidence.bmj.com>), ACP Pier (<http://pier.acponline.org>), and First Consult ([www.firstconsult.com](http://www.firstconsult.com)). These resources identify the best evidence on a disease topic from multiple sources and synthesize the evidence into one document. Usually they include an evidence ranking.

**Synopses:** Some of the commercial products in this category are ACP Journal Club (<http://acpjournals.acponline.org/>), Essential Evidence Plus Daily POEM Alerts ([www.essentialevidenceplus.com/product/features\\_dailyip.cfm](http://www.essentialevidenceplus.com/product/features_dailyip.cfm)), and Journal Watch ([www.jwatch.org](http://www.jwatch.org)). Instead of synthesizing all of the best evidence on a disease topic, these products identify journal articles that have clinical significance and produce a critical appraisal synopsis of the individual article. It is a great way to keep up with the literature without having to read hundreds of journals.

All the product types listed so far are filtered for their methodological quality. For the following product types you need to use your own critical appraisal skills. We discuss critical appraisal later.

**Studies:** The next three levels of the evidence product pyramid are *randomized controlled trials*, *cohort studies*, and *case-control studies/case series/case reports*. All of these can be found in the large

## Exhibit 5-7 PubMed Results Utilizing the Systematic Review Filter

The screenshot shows a web browser window displaying the PubMed website. The search query is "Nursing Staff/economics"[Mesh]. The page is filtered to show 11 results, with the first result selected. The left sidebar contains various filters such as Text availability, Publication dates, Species, Article types, Languages, and MeSH Terms. The main content area displays the title, authors, abstract, and related citations for the selected article. The right sidebar shows filter options and search details.

**Search Results Summary:**

- Search Query:** "Nursing Staff/economics"[Mesh]
- Display Settings:** Abstract, 200 per page, Sorted by Pub Date
- Filter your results:** All (11), Clinical Trial (3), Economics/Narrow (2), English & Humans (11), Etiology/Narrow (0), Meta-analysis (1), Practice Guideline (0), Prognosis/Narrow (0), Published in the last 2 years (2), Published in the last 5 years (3), Qualitative Research/Broad (11), Randomized Controlled Trial (2), Systematic Reviews (11), Therapy/Narrow (2)
- Results: 11**
- Filters activated:** Systematic Reviews
- Result 1:**
  - Title:** Linking economics and quality: developing an evidence-based nurse staffing tool.
  - Authors:** Anderson EE, Frith KH, Caspers B.
  - Abstract:** The evidence linking nurse staffing with patient outcomes has been established; however, incorporating the evidence into practice is lagging. This article describes a practice/academic collaborative initiated to promote the translation of staffing research into decision-making through the development of an evidence-based staffing tool. Reports of previous research on nurse staffing and patient and financial outcomes are summarized, and aspects of the 2 phases of the collaborative to date are discussed. In the initial phase, a pilot research study on nurse staffing and patient outcomes in medical-surgical units support previous findings that higher nurse staffing results in positive patient outcomes. The focus in the current phase is expansion of the pilot research and the development of a decision-making staffing tool based on the additional staffing research. Identifying the critical data elements and sources of the data are major challenges to achieving the project objectives. Other challenges are maintaining interest and creating wide-spread understanding of the importance of nurse managers having access to timely, useable information. The success of the collaborative is due to the commitment and participation of leaders from various disciplines in both organizations.
  - PMID:** 21157264 [PubMed - indexed for MEDLINE]
  - MeSH Terms:** Alabama, Cooperative Behavior, Cost-Benefit Analysis, Economics, Hospital/statistics & numerical data, Evidence-Based Nursing/economics\*, Evidence-Based Nursing/manpower

Source: From www.pubmed.gov

citation databases PubMed and CINAHL. Randomized controlled trials and case studies/reports are choices under *Article Type* in PubMed and *Publication Type* in CINAHL. *Case-control study* is a subject heading in both products. *Cohort study* is a subject heading in PubMed; CINAHL uses *prospective study* instead.

Another valuable free resource is the *National Guideline Clearinghouse* (guidelines.gov), shown in **Exhibit 5-8**. The information in this database fits into different levels of the evidence resource pyramid, depending on the quality of the guideline. Look for guidelines that have explicit evidence ratings such as the one that was used in the guideline “Prevention of Falls in the Elderly” by the Hartford Institute for Geriatric Nursing (**Exhibit 5-9**).

The bottom tier of the evidence product pyramid is *background information/expert opinion*. Products that fall into this category are textbooks and opinion journal articles.

### Exhibit 5–8 Agency for Healthcare Research and Quality (AHRQ) National Guideline Clearinghouse

The screenshot displays the AHRQ National Guideline Clearinghouse interface. At the top, it identifies the U.S. Department of Health & Human Services and the AHRQ logo. The main content area is titled 'Guideline Summary' and includes a search bar with the term 'falls' entered. The 'Guideline Title' is 'Preventing falls in acute care. In: Evidence-based geriatric nursing protocols for best practice.' The 'Bibliographic Source(s)' section lists a 2008 publication by Gray-Miceli D. The 'Guideline Status' section notes that this is the current release. Below this, there are tabs for 'Jump To', 'Guideline Classification', and 'Related Content'. The 'Guideline Classification' tab is active, showing a list of categories such as 'Scope', 'Methodology', 'Recommendations', 'Evidence Supporting the Recommendations', 'Benefits/Harms of Implementing the Guideline Recommendations', 'Implementation of the Guideline', 'Institute of Medicine (IOM) National Healthcare Quality Report Categories', 'Identifying Information and Availability', and 'Disclaimer'. A 'Scope' section at the bottom indicates the 'Disease/Condition(s)' as 'Falls and injury from falls'.

Source: Courtesy of the National Guideline Clearinghouse ([www.guidelines.gov](http://www.guidelines.gov)).

### Exhibit 5–9 Hartford Institute for Geriatric Nursing Levels of Evidence Ratings

HIGN (2008)	Levels of Evidence
	<b>Level I:</b> Systematic reviews (integrative/meta-analyses/clinical practice guidelines based on systematic reviews)
	<b>Level II:</b> Single experimental study (randomized controlled trials [RCTs])
	<b>Level III:</b> Quasi-experimental studies
	<b>Level IV:</b> Non-experimental studies
	<b>Level V:</b> Care report/program evaluation/narrative literature reviews
	<b>Level VI:</b> Opinions of respected authorities/Consensus panels

Complexity exists in retrieving best evidence as it does in any professional enterprise. A nurse manager definitely should acquire basic evidence-finding skills and be what David Slawson of the University of Virginia describes as an *information master* or a *YODA*, one who is “Your Own Data Analyzer” (Slawson & Shaughnessy, 2000, p. 65). The literature describes how time, access, and skill are major barriers to information retrieval. Therefore, you should develop a relationship with a professional health sciences librarian. If you are with a large healthcare system, get to know your librarian, and if you do not have one, encourage your enterprise to employ one. If you are with a smaller healthcare system, you may have an Area Health Education System (AHEC) library service that can help. AHECs are programs started with federal money that then become self-supporting or state funded or a combination of both. Their mission is to provide continuing health education, library service, and precepting opportunities for organizations that otherwise would not have access to these services. If you would like to know if there is a medical librarian in your area, contact the National Network of Libraries of Medicine ([nnlm.gov](http://nnlm.gov)) (**Exhibit 5–10**).

## Exhibit 5-10 National Network of Libraries of Medicine

**NN/LM National Network of Libraries of Medicine**  
nnlm.gov

Search:

Home | Member Services | Provide Outreach | Resource Sharing & Document Delivery | Health Information on the Web | Funding | Training & Educational Opportunities

**In this section:**

- About Us
- About NN/LM Membership
- Members Directory
- System Requirements
- Contact Us
- Credits
- Find Local Resources:

**Contact Us**

**Topics on this page:**

- NN/LM Regional Medical Libraries:
  1. Middle Atlantic Region (DE, NJ, NY, PA)
  2. Southeastern/Atlantic Region (AL, FL, GA, MD, MS, NC, SC, TN, VA, WV, District of Columbia, Puerto Rico, and the U.S. Virgin Islands)
  3. Greater Midwest Region (IA, IL, IN, KY, MI, MN, ND, OH, SD, WI)
  4. Midcontinental Region (CO, KS, MO, NE, UT, WY)
  5. South Central Region (AR, LA, NM, OK, TX)
  6. Pacific Northwest Region (AK, ID, MT, OR, WA)
  7. Pacific Southwest Region (AZ, CA, HI, NV, and U.S. Territories in the Pacific Basin)
  8. New England Region (CT, ME, MA, NH, RI, VT)
- NN/LM National Centers:
  - National Library of Medicine Training Center (NTC)
  - Outreach Evaluation Resource Center (OERC)
  - Web Services Technology Operations Center (Web-STOC)
- Overseas Military Medical Personnel:
  - Armed Forces Medical Library

**NN/LM Regional Medical Libraries:**

National Network of Libraries of Medicine Home Page: <http://nnlm.gov/>  
Toll-free phone number for all Regional Medical Libraries: 1-800-339-7657

**1. Middle Atlantic Region (DE, NJ, NY, PA)**

University of Pittsburgh  
Health Sciences Library System  
3550 Terrace Street, 200 Scaife Hall  
Pittsburgh, PA 15261  
Phone: (412) 648-9750  
Fax: (412) 648-8819  
Email: [nnlmmar@pitt.edu](mailto:nnlmmar@pitt.edu)  
URL: <http://nnlm.gov/mar/>  
States Served: DE, NJ, NY, PA

**2. Southeastern/Atlantic Region (AL, FL, GA, MD, MS, NC, SC, TN, VA, WV, District of Columbia, Puerto Rico, and the U.S. Virgin Islands)**

University of Maryland, Baltimore  
Health Sciences and Human Services Library  
801 West Lombard Street  
Baltimore, Maryland 21201-1592

Source: Courtesy of the National Network of Libraries of Medicine ([www.nnlm.gov](http://www.nnlm.gov)).

A local academic health science library may also provide library services to healthcare organizations. At our organization, we provide mediated searching, delivery of journal articles and books, training, and smartphone support and obtain grants for dozens of healthcare facilities in our state.

Librarians can be helpful in selecting evidence resources for healthcare systems and for negotiating with vendors. They can efficiently do complex evidence searches for you that might take you hours to perform. Librarians have networks such as DocLine and OCLC that enable them to obtain evidence speedily from other health science libraries across the country.

*ABI/INFORM* is a *proprietary database* that is an excellent source for business, financial, and management information. According to the vendor website:

Delivering over 6,800 journals, nearly 80% of which are in full-text, ABI/INFORM Complete™ is the most comprehensive business database on the market today. Offering much more than journal content, this diverse solution provides the right mix of content types to meet the needs of any business researcher. ([www.proquest.com/en-US/catalogs/databases/detail/abi\\_inform.shtml](http://www.proquest.com/en-US/catalogs/databases/detail/abi_inform.shtml))

The *Gale Group of databases* ([infotrac.galegroup.com](http://infotrac.galegroup.com)) is proprietary and has several business databases such as Business & Company ProFile ASAP, Business & Company Resource Center, Business & Industry, Business & Management Practices, and Business Reference Suite. Gale also has the health databases Health Reference Center Academic and Health & Wellness Resource Center.

The *Lexis/Nexis* database ([www.lexisnexis.com](http://www.lexisnexis.com)) is another proprietary database. It is an outstanding source of legal information and news. It has information on the State Annotated Codes and is a good source for nursing board codes. *FindLaw* ([www.findlaw.com](http://www.findlaw.com)) is an excellent source for finding a particular law or a case.

If you are not searching for information on a specific topic but are looking for professional reading material for nurse managers, the *Journal of Nursing Administration (JONA)* is an excellent publication. It is published monthly (July/August combined) by Lippincott Williams & Wilkins. Other first-rate journals include *Nursing Economic\$, Nursing Management, Nursing Administration Quarterly, Nurse Leader,* and *Seminars for Nurse Managers*. Other appropriate nursing journals about quality, legal, education, and specific nursing clinical specialties may also be appropriate. General business journals such as the *Harvard Business Review* are also good sources, as are generic business and administration textbooks. In addition, specific professional organizations have wonderful websites, giving administrative and clinical information for their specialty.

*State webpages* are a superb source of statistical information. In many instances, they have the state code, health professional licensure verification, and rules and regulations from various state agencies. Another good source of statistical information is the National Center for Health Statistics, produced by the Centers for Disease Control and Prevention ([cdc.gov/nchs](http://cdc.gov/nchs)). Also the site for [phpartners.org](http://phpartners.org) is a quality site for health statistics (**Exhibit 5–11**).

Specific information on Medicare and Medicaid can be found at [cms.hhs.gov](http://cms.hhs.gov) at the Centers for Medicare and Medicaid Services. Another useful database is [medicare.gov](http://medicare.gov), which has a link to a site that compares nursing homes.

*ERIC* ([eric.ed.gov](http://eric.ed.gov)) is a premier education database. According to the ERIC website:

ERIC provides unlimited access to more than 1.4 million bibliographic records of journal articles and other education-related materials, with hundreds of new records added multiple times per week. If possible, links to full text in Adobe PDF format are included.

If you need a book, you can search for books in the subject area of your interest at Amazon.com. Copy the information and submit it to your librarian, who may be able to obtain the book on interlibrary loan. You can search the online public access catalogs of large libraries. Almost all large libraries have made their catalogs available to search freely on the Web. *LOCATORPlus*, the catalog of the U.S. National Library of Medicine, the largest medical library in the world, is available at [locatorplus.gov](http://locatorplus.gov). If you find a good title, ask your librarian to obtain it on interlibrary loan. In addition, the major publishers have very helpful websites (i.e., Jones & Bartlett Learning, [jblearning.com](http://jblearning.com)).

Finally, you should learn to use search engines such as Google, still the search engine of choice even though other search engines do have some features not contained in Google. Take time to look around Google. The Google Images tab is a great service because it restricts your search to only images. If you wanted an image of a pressure ulcer, for example, this would be a good place to look. Google Scholar provides a way of searching scholarly material across many subject areas, from nursing to music, in many formats, such as books, papers, abstracts, and conference proceedings.

Another way to keep current and find information is through *social media*. Knowledge networks “foster social relationship or ties among people that build organizational social capital” (MacPhee, Suryaprakash, & Jackson, 2009, p. 415). Communities of practice can be formed from online collaborations that result over

## Exhibit 5–11 Public Health Partners Database—Health Statistics

The screenshot shows a web browser window displaying the website [phpartners.org/health\\_stats.html](http://phpartners.org/health_stats.html). The page features a navigation menu on the left with categories like "Public Health Topic Pages" and "Main Topic Pages". The main content area is titled "Health Data Tools and Statistics" and includes a sub-section for "County and Local Health Data". This section lists several resources:

- Area Resource File (ARF)** - (Health Resources and Services Administration (HRSA)) - The ARF database contains more than 6,000 variables for each of the nation's counties and provides information on health facilities, health professions, measures of resource scarcity, health status, economic activity, health training programs, and socioeconomic and environmental characteristics.
- Community Health Status Indicators (CHSI)** - (Department of Health and Human Services (HHS) U.S.) - County-specific data and reports on health status indicators. States and counties can use the indicators to check county health status, compare one's county to peers and the U.S., and characterize the overall health of the county and its citizens to support health planning.
- County Health Calculator** - (Virginia Commonwealth University Center on Human Needs) - Tool for advocates and policy makers to understand and demonstrate how education and income affect health.
- County Health Rankings & Roadmaps** - (Robert Wood Johnson Foundation (RWJF), University of Wisconsin) - Provides county-by-county health rankings in each of the 50 states, explanations of each health factor, and actionable strategies to improve the health of communities across the nation.
- Interactive Atlas of Heart Disease and Stroke** - (Centers for Disease Control and Prevention (CDC)) - An online mapping tool that documents geographic disparities in cardiovascular diseases and their risk factors at the local level. The Atlas allows users to create county-level maps of heart disease and stroke and include overlays of congressional boundaries and health care facility locations. In addition, county-level maps of poverty rates, education levels, the food environment, access to health care, and other social factors are available.
- PeriStats** - (March of Dimes) - Provides access to maternal and infant health-related data at the U.S., state, county, and city level.
- Profile-10** - (National Association of County and City Health Officials (NACCHO)) - Online data query system for statistics on local health department (LHD) financing, workforce, and activities. The data is from NACCHO's National Profile of Local Health Departments (LHDs) Survey.
- Quick Health Data Online** - (Office on Women's Health, HHS (OWH)) - State and county level data available by gender, race and ethnicity. Categories include demographics, mortality, natality, reproductive health, violence, prevention, disease, and mental health.
- SMART: BRFSM City and County Data** - (Centers for Disease Control and Prevention (CDC)) - The Selected Metropolitan/Micropolitan Area Risk Trends (SMART) project uses the Behavioral Risk Factor Surveillance System (BRFSS) to analyze the data of selected metropolitan and micropolitan statistical areas (MMSAs) with 500 or more respondents. The data can be used to identify emerging health problems, establish and track health objectives, and develop and evaluate public health policies and programs.

Source: From [www.phpartners.org](http://www.phpartners.org)

a period of time. Examples to build knowledge networks are many of today's social media tools such as blogs, wikis, and Twitter (MacPhee et al., 2009).

The first social media tool we look at is *Twitter*. Actually, Twitter is a social networking and microblogging service that enables its users to send and read messages known as tweets. Tweets are text-based posts of up to 140 characters displayed on the author's profile page and delivered to the author's subscribers, who are known as followers. It has been used in business, churches, and schools. It can be used for research, networking, and brainstorming and to maximize classroom connections/discussions. Twitter isn't just about "I'm going to the grocery store" or "Go Giants!" Twitter is an excellent way to stay current with the latest news of your profession. By following professional organizations and leaders in your profession, you can quickly and easily keep up with the current information in your field. Examples include the following:

<http://scrubsmag.com/7-nurse-twitter-feeds-you-should-follow>  
[www.onlinedegreetalk.org/twitter-feeds-nursing-students](http://www.onlinedegreetalk.org/twitter-feeds-nursing-students)  
[www.lpn-to-rn.net/blog/2009/101-ways-to-use-twitter-in-your-hospital](http://www.lpn-to-rn.net/blog/2009/101-ways-to-use-twitter-in-your-hospital)



Another social media tool of value is *blogs*. A blog is similar to an online journal. The name comes from the two words, *Web* and *log*. Blogs are written by one person, but others can comment on the blogs. There are many blogs online about and for nurses and nursing students. (As always, some will be good and some won't!)

<http://blogs.nursing.jhu.edu>

<http://allnurses.com/nursing-news>

The last social media tools we discuss are *Facebook* and *LinkedIn*. Both of these tools can be useful to professionals. Facebook focuses on building networks of friends. This aspect can be beneficial to expanding the reach of your organization or professional network. LinkedIn is a more professional website that allows the user to upload a resume, showcase skills, and build professional connections. Here are two examples:

<http://megroberts.wordpress.com/2008/08/06/facebook-pages-using-them-to-benefit-your-organization>

<http://gigaom.com/2010/10/27/11-practical-business-uses-for-linkedin-facebook-and-twitter>

One of the most important things to remember when dealing with social media is professionalism and confidentiality. The American Nurses Association's Principles for Social Networking (**Exhibit 5–12**) are included here.

The American Medical Association Council on Ethical and Judicial Affairs has published a report on professionalism in the use of social media. Some things the council feels health professionals should be aware of are the boundary that exists in the patient–health professional relationship, the perception of your professional peers of the information you post online, and the responsibility you have to report any unprofessional behavior that you see online such as violations of patient privacy. One thing you can do to protect your professional relationships is to have two separate accounts, one for personal use and one for professional use (Shore et al., 2011).

The National Council of State Boards of Nursing released a white paper in August 2011. It provides a guide including many types of scenarios to nurses who use any form of social media.

Social and electronic media possess tremendous potential for strengthening personal relationships and providing valuable information to health care consumers. [ . . . ] By being careful and conscientious, nurses may enjoy the personal and professional benefits of social and electronic media without violating patient privacy and confidentiality.

The Joint Commission stresses the importance of *patient education*. Where do you go for high-quality, reliable consumer health information that is not prohibitively expensive? Imagine you work for a fertility specialist. A patient's husband says to you, "My wife has been coming to this office for one year now and

#### **Exhibit 5–12** American Nurses Association's *Principles for Social Networking*

1. Nurses must not transmit or place online individually identifiable patient information.
2. Nurses must observe ethically prescribed professional patient–nurse boundaries.
3. Nurses should understand that patients, colleagues, institutions, and employers may view postings.
4. Nurses should take advantage of privacy settings and seek to separate personal and professional information online.
5. Nurses should bring content that could harm a patient's privacy, rights, or welfare to the attention of appropriate authorities.
6. Nurses should participate in developing institutional policies governing online conduct.

Source: From <http://www.nursingworld.org/socialnetworkingtoolkit.aspx>

she is not yet pregnant. I have heard that acupuncture can help with infertility. Do you know anything about this?" What do you do?

Consumer/patient information is important, and many people are appallingly illiterate when it comes to health knowledge. "Nearly 90% of U.S. adults are less than proficient in reading, understanding and acting on medical information, according to a U.S. Dept. of Education literacy assessment of more than 19,000 Americans that was last done in 2003" (O'Reilly, 2012). Conditions such as diabetes and obesity could be greatly reduced if consumers were better educated about their health and if they would practice what they learn. We believe that this lack of availability and use of health information is a national health crisis.

Where do you begin to find unbiased, practical information? Countless consumer health information resources exist. We could give you list after list of websites, books, and organizations that provide consumer/patient health information. We have found this flood of information to be confusing to information seekers. What we prefer is to offer a limited, but manageable, number of excellent resources. By using gateways that have already been evaluated by librarians, you can save time, energy, and money.

A good starting point for finding consumer/patient information is the database *MedlinePlus* ([medlineplus.gov](http://medlineplus.gov)). MedlinePlus (**Exhibit 5–13**) is maintained by the National Library of Medicine, one of the National Institutes of Health of the federal government. MedlinePlus is an aggregator of the best consumer health information on the Web. Because of its comprehensive nature, it usually makes possible "one-stop shopping" for consumer health information. When you search by topic in MedlinePlus, you retrieve a list of links from other websites that have been quality filtered. The information in MedlinePlus is grouped by topic and is easy to search. Some topics even have tutorials for those with poor reading skills as well as links to resources labeled "easy-to-read." The tutorials can be heard through computer speakers or through headphones while you watch a slideshow that explains a procedure or condition.

### Exhibit 5–13 MedlinePlus Health Topics

The screenshot shows the MedlinePlus website interface. At the top, it says "MedlinePlus Trusted Health Information for You" and "A service of the U.S. National Library of Medicine NIH National Institutes of Health". There is a search bar with the text "Search MedlinePlus" and a "GO" button. Below the search bar are navigation tabs: "Health Topics", "Drugs & Supplements", "Videos & Cool Tools", and "ESPAÑOL".

Under the "Health Topics" tab, there is a section titled "Find your topic by first letter:" with a list of letters: "A B C D E F G H I J K L M N O P Q R S T U V W XYZ List of All Topics". Below this is a "Health Topics" section with a sub-header "Read about symptoms, causes, treatment and prevention for over 900 diseases, illnesses, health conditions and wellness issues. MedlinePlus health topics are regularly reviewed, and links are updated daily." There are social media icons for Facebook, Twitter, and YouTube.

The main content area is divided into three columns of health topics:

- Body Location/Systems:** Blood, Heart and Circulation; Bones, Joints and Muscles; Brain and Nerves; Digestive System; Ear, Nose and Throat; Endocrine System; Eyes and Vision; Immune System; Kidneys and Urinary System; Lungs and Breathing; Mouth and Teeth; Skin, Hair and Nails.
- Disorders and Conditions:** Cancers; Diabetes Mellitus; Genetics/Birth Defects; Infections; Injuries and Wounds; Mental Health and Behavior; Metabolic Problems; Poisoning, Toxicology, Environmental Health; Pregnancy and Reproduction; Substance Abuse Problems; Diagnosis and Therapy; Complementary and Alternative Therapies; Diagnostic Tests.
- Demographic Groups:** Children and Teenagers; Men; Population Groups; Seniors; Women; Health and Wellness; Disasters; Fitness and Exercise; Food and Nutrition; Health System; Personal Health Issues; Safety Issues; Sexual Health Issues; Social/Family Issues.

Source: From <http://www.nlm.nih.gov/medlineplus/healthtopics.html>

MedlinePlus is a good source of drug information and includes directories and dictionaries as well. A Spanish version of the site is also available and includes an excellent encyclopedia and Spanish-language tutorials. One of MedlinePlus's newest enhancements is the audio feature for people with low health literacy or disabilities; the website is designed to read aloud the contents of a page in either English or Spanish. MedlinePlus is now linked to consumer health information in more than 40 languages. The National Library of Medicine continually updates, expands, and improves the site.

If you cannot find an answer at [MedlinePlus.gov](http://MedlinePlus.gov), we recommend that you use the *Medical Library Association's Consumer and Patient Health Information Section (CAPHIS)* site at <http://caphis.mlanet.org>. The people who maintain this site are the best of the best. They are professional librarians who spend a lot of their time providing consumer/patient health information on a daily basis. The group maintains a list of the top 100 consumer/patient health information websites. According to CAPHIS:

The purpose of the CAPHIS Top 100 List is to provide CAPHIS members and other librarians with a resource to use in their daily practice and teaching. Secondly, it is our contribution to the Medical Library Association so that the headquarters staff can refer individuals to a list of quality health web sites. Our goal is to have a limited number of resources that meet the quality criteria for currency, credibility, content, audience, etc., as described on our website.

Much fraudulent consumer/patient health information exists on the Web. A site that exposes false and misleading health information on the Web is *Quackwatch* ([quackwatch.org](http://quackwatch.org)). According to information found at the site, the mission of Quackwatch is as follows:

Quackwatch is an international network of people who are concerned about health-related frauds, myths, fads, fallacies, and misconduct. Its primary focus is on quackery-related information that is difficult or impossible to get elsewhere. Founded by Dr. Stephen Barrett in 1969 as the Lehigh Valley Committee Against Health Fraud (Allentown, Pennsylvania), it was incorporated in 1970. In 1997, it assumed its current name and began developing a worldwide network of volunteers and expert advisors.

As a nurse manager, you should be interested in efficiency and effectiveness. *Mobile technology* (smartphones and tablets) can assist in preventing medication errors and keep the nursing staff up-to-date in regard to clinical knowledge. Mobile devices use either the Android (Google) or Apple operating system. They can be indispensable clinical tools. The drug database *ePocrates* ([epocrates.com](http://epocrates.com)) is a free drug reference tool. Studies have been published that demonstrate ePocrates use can reduce medication error. There are other point-of-care drug tools as well such as Lexi-Comp and Micromedex.

*Point-of-care disease databases* are the second main category of mobile technology resources. *Dynamed* (<http://dynamed.ebscohost.com/>) is a prime example of this type of resource. Dynamed has an A to Z list of diseases. Each section has a *General Information, Causes and Risk Factors, History and Physical, Diagnosis, Treatment, Prognosis, and Prevention* section. The information is high quality and is updated frequently. Other resources like this are Essential Evidence Plus, Clinical Evidence, Clinical Key, and UpToDate. The use of mobile technology with this type of database can overcome the attrition of knowledge clinicians experience over a lifetime.

Regular webpages are not easily viewed on smartphones. Therefore, many *smartphone webpages* are created as mobile webpages. These pages are much easier to navigate and view on a small screen. *Apps* (short for applications) are better than mobile websites. Apps are downloaded to a mobile device. Dynamed has an app. Compare the regular webpage, mobile webpage, and app for Amazon.com to see the difference between the three platforms.

Two sources for health resources on a smartphone are [www.skyscape.com](http://www.skyscape.com) and [www.medicalwizards.com](http://www.medicalwizards.com). Just a quick perusal of Skyscape shows featured nursing texts for personal digital assistants (PDAs)

such as RNNotes (Nurse's Clinical Pocket Guide), Davis's Drug Guide for Nurses, Nursing Constellation: All-In-One Nursing Solution, and Nurse's Manual of Laboratory and Diagnostic Tests. This gives you a taste of the type of information that can be used on a smartphone or handheld device in a clinical setting.

Free downloads are available for diagnostic testing databases, screening databases, immunization databases, prognostic and therapeutic calculators, budget and scheduling information, and other useful applications. We encourage you to invest in a smartphone or tablet. They enable you to bring information with you wherever you go. They can enable you to give better care to patients. David Slawson, MD, a well-known proponent of EBP, equates a smartphone to a stethoscope as a clinical tool. In our institution, the library allows mobile technology users to drop off their device, and we load all the software for them. We install the Dynamed app and Essential Evidence Plus ([essentialevidenceplus.com](http://essentialevidenceplus.com)) mobile link. These resources are outstanding best-evidence databases. They require an annual subscription. We also install the AHRQ ePSS screening tool; Shots, which is a childhood and adult immunization schedule ([immunizationed.org](http://immunizationed.org)); Archimedes, which has more than 150 clinical calculators; and the Stat!Ref book collection ([www.statref.com](http://www.statref.com)).

These technology tools can have a positive financial impact by reducing medication error and providing high-level evidence so that clinical practices are maintained optimally. Be an enabler by encouraging mobile technology in the clinic.

The EHR touches every aspect of health care. "The evidence suggests that the quality of nursing documentation improves after the introduction of HIT [health information technology] and that nurses spend less time on documentation than they did before HIT implementation" (Waneka & Spetz, 2010, p. 510).

Library information is no exception. For example, the consumer health database MedlinePlus can be connected to the EHR. The National Library of Medicine explains how this is done (at [www.nlm.nih.gov/medlineplus/connect/overview.html](http://www.nlm.nih.gov/medlineplus/connect/overview.html)): MedlinePlus Connect accepts requests for information on diagnoses (problem codes), medications, and lab tests and returns related MedlinePlus information. It is available as a web application or a web service. Upon receiving a problem code request, MedlinePlus Connect returns relevant MedlinePlus health topics and other related information. MedlinePlus has hundreds of health topic pages that bring together information from National Institutes of Health, other U.S. government agencies, and reputable health information providers. Health topic pages cover a wide range of conditions and wellness issues and include key resources to inform patients about their health: overviews, information on symptoms and treatments, recent health news, clinical trials, and much more. You can browse the list of all health topics.

For problem code requests, MedlinePlus Connect supports ICD-9-CM (International Classification of Diseases, 9th edition, Clinical Modification) and SNOMED CT (Systematized Nomenclature of Medicine, Clinical Terms). Note: MedlinePlus Connect coverage of SNOMED CT focuses on CORE Problem List Subset codes (Clinical Observations Recording and Encoding) and their descendants. MedlinePlus Connect will support ICD-10-CM when it becomes the U.S. standard. MedlinePlus Connect can also link your EHR system to drug information written especially for patients. When an EHR system sends MedlinePlus Connect a request that includes a medication code, the service returns a link or links to the most appropriate drug information. MedlinePlus drug information is the *AHFS Consumer Medication Information* and is licensed for use on MedlinePlus from the American Society of Health-System Pharmacists (ASHP, Inc.). For medication requests, MedlinePlus Connect supports RXCUI (RxNorm Concept Unique Identifier) and NDC (National Drug Code).

MedlinePlus Connect also returns information in response to laboratory test codes. This information is from the A.D.A.M. encyclopedia, which MedlinePlus licenses. For lab test requests, MedlinePlus Connect supports LOINC (Logical Observation Identifiers Names and Codes). MedlinePlus Connect supports

requests for information in English or Spanish. It is intended for use within the United States healthcare system and cannot support coding systems not used in the United States.

A warning is in order: The EHR movement, along with a lot of other health information technology (HIT), is *very expensive* to install and maintain. Nurse managers are charged with being fiscally responsible. Be careful not to purchase expensive technology because a competitor purchases it. The library profession has become highly automated. As health science librarians, we try to understand the process behind any system in detail including its inputs and outputs. Then we decide whether the process would be improved by automating it, including a cost-benefit analysis. Doing the intellectual work of describing a process in detail makes shopping for automated systems much more effective. An article from the *Journal of the American Medical Informatics Association* indicated it is difficult to reach any definite conclusion as to whether the additional costs and benefits (of HIT) represent value for money (O'Reilly, Tarride, Goeree, Lokker, & McKibbin, 2012).

Nurse managers have an important role in the implementation of EHRs. An article titled "Nursing Leaders Serving as a Foundation for the Electronic Medical Record" (Edwards, 2012) from the *Journal of Nursing Trauma* stated that a nurse manager "being proactive in the reception, design, development, and implementation of an EMR plays a role in creating an organizational culture that allows for the flow of data efficiently and accurately" (p. 111). A recommended book on EHR implementation is *Connected for Health: Using Electronic Health Records to Transform Care Delivery* by L. L. Liang (2010).

The National Library of Medicine (NLM) has an excellent page of resources for *health informatics* ([www.nlm.nih.gov/hsrinfo/informatics.html](http://www.nlm.nih.gov/hsrinfo/informatics.html)). Health informatics is the broader discipline that includes medical librarianship and technologies such as the electronic health record. NLM defines health informatics as "the interdisciplinary study of the design, development, adoption and application of IT-based innovations in healthcare services delivery, management and planning" (R. Procter, personal communication, August 16, 2009).

We have a great idea—use your librarian. Do not hesitate to "bother" your librarian if there is one in your facility. Librarians are one of the world's best-kept secrets. Librarians will do literature searches for you when you do not have time. They can order articles, including administrative articles, for you and your staff that the library does not have.

Some librarians are willing to come out to the clinical areas of the facility on a regular basis and interact with the staff. Librarians can find information and email it to you. One way, according to Reichel (1989), that librarians can meet the needs and obligations of the parent institution is by bibliographic instruction or teaching. Bibliographic instruction teaches library patrons how to locate and use library resources efficiently. Librarians love to teach. Schedule classes for them to work with you and/or your nursing staff. They can explain the information resources available at your facility and teach your staff how to properly use them.

You work in a rural long-term care facility. You want better information resources for your staff but cannot afford a library in the facility. What do you do? Jensen and Maddalena (1985) noted, "The results of our work show that small rural hospitals (100 beds or fewer) have extreme difficulty in maintaining adequate on-site library resources and services over a period of time" (p. 60). Thibodeau and Funk's (2009) research discovered that "about 44% of hospitals had some level of on-site library service in 1989, compared with between 33.6% and 29.1% of hospitals in 2006" (p. 274). Given the financial crunch on small hospitals, it is safe to bet that the number is much less than that now. Often, unfortunately, when a hospital makes spending cuts, the library is a victim. A solution for these hospitals may be to contract the services of an outreach librarian who would spend varying amounts of time there, depending on the size of the hospital and its information needs. The outreach librarian visits several key areas throughout the

hospital including nurses' stations, the physicians' lounge, the emergency room, the pharmacy, or outlying clinics. In Gordner's (1982) experience with outreach librarianship, nurses were the largest users of the information service.

As previously noted under Acquire, there may be an AHEC program that would provide librarian services (either free for a small fee) for your geographic area. Fowkes, Campeau, and Wilson (1991) reported, "AHECs have demonstrated an ability to respond to current and emerging needs that distinguishes them from other institutions that have educational missions" (p. 219). AHECs responded better because they were more flexible than traditional academic bureaucracies and were more in touch with the communities they serve. Fowkes and colleagues continued: "Having both academic and community roots, AHECs know the needs and resources of each and how to use them in a manner that benefits both, thus strengthening and balancing the partnership between school and community" (p. 219).

The National Network of Libraries of Medicine (NN/LM) is a division of the National Library of Medicine. NN/LM has centers throughout the country. Each center has trainers who will come out to your town and teach classes on mobile technology, consumer health, public health information resources, and National Library of Medicine databases, just to name a few topics that are in their repertoire. The web address for NN/LM is [nnlm.gov](http://nnlm.gov). To utilize the training, your organization must be an NN/LM member. Membership is free.

It is imperative that nursing leadership in rural areas provide organizational support for the enhancement of evidence-based practices. Munroe, Duffy, and Fisher (2006) reported that the overall knowledge of nurses in a rural community hospital increased significantly when evidence-based practice was promoted through personnel, education, and process interventions. An added bonus was a renewed "sense of professionalism and pride" among nursing personnel.

Florance, Giuse, and Ketchell (2002) described how Vanderbilt Medical Center librarians were trained in pharmacology, physiology, and biostatistics and actively participated in medical rounds. They not only gathered information for clinicians but also summarized it, appraised it, and offered commentary. This same practice could work with nurses. Williams and Zipperer (2003) said, "The occasional participation by the librarian in patient rounds with nurses and other clinical staff can engender trust in the relationship between the librarian and the clinical team" (p. 204). Your librarian could come on the floor once or twice every week. She could gather topics to be researched, meet new staff, update the staff about new developments in the library, and give one-on-one training. As a result, the nursing staff would save time and the librarian would become an important part of the clinical team.

We like to use the following illustration to explain why we believe librarians are an essential part of the healthcare team (Holtum, 1999):

When health professionals request lab work, they turn to medical technologists. If an X-ray is needed, they direct the patient to a radiographic technician. The reason is simple: Even though the clinician is certainly capable of learning and performing these tasks (though at considerable time and expense), higher quality and greater cost-effectiveness are obtained by using the skills of specialists instead. Can the same not be said of the expertise and experience that librarians bring to the health care enterprise? (p. 406)?

Although you may have learned some laboratory skills in school, you still send samples to a lab for analysis. Libraries are similar. It just makes sense to give a task to those who are trained and experienced to do it. We hope you are good at finding information, but if a skilled professional is available to do it for you, you can dedicate your time to what you do best—managing the unit and working with staff who are taking care of sick people. Studies by Griffiths and King indicated that in professional organizations,

having a professional librarian and library actually saved the institution money compared to what it would take for each individual to find the information they needed on their own.

Please be an advocate for libraries in your institution. Librarians need your support when budgets are cut because administrators often consider eliminating the library first as a simple cost-cutting measure. Most small hospitals and healthcare institutions do not have a library because of the expense. If this is your situation, you may want to consider contracting for the services of an outreach librarian. Of course, you can also contact a librarian by email or by telephone. Another option is to contact your local academic health sciences library for assistance.

## Appraise

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The next step in finding best evidence is critical appraisal. This step can be difficult, but it is doable. We should all be thankful that there are many evidence products, mentioned in an earlier section, that already preappraise the evidence for us. Critical appraisal choices depend on the type of question being asked. In healthcare, most questions are about treatment, followed by diagnosis and questions related to etiology/harm, prognosis, cost/economics, or patient education. If no summaries, syntheses, or synopses exist that answer your question, you will want to find a randomized controlled trial if you have a therapy or etiology/harm question. The best individual study type for a prognosis question is a cohort study and for a diagnosis question is a head-to-head comparison of the new diagnostic technique with the gold standard. The principle to follow is if there is not the highest evidence type available to answer your question, move down the evidence pyramid to the next level.

There are critical appraisal worksheets for different question types freely available on the Web. One list can be found at the Dartmouth Biomedical Library at [www.dartmouth.edu/-library/biomed/guides/research/ebm-resources-materials.html](http://www.dartmouth.edu/-library/biomed/guides/research/ebm-resources-materials.html). Another list that includes an economic analysis critical appraisal worksheet is at the Duke Medical Library at <http://guides.mcilibrary.duke.edu/content.php?pid=274373&sid=2262324>.

A useful mnemonic device we learned from Duke to use to critically appraise therapy articles is FRISBE (follow-up, randomization, intention to treat analysis, same at baseline, blinded, equal treatment). At least 80% of those who start into a trial should be accounted for at the end (follow-up). A number less than 80% raises questions about the results. Trial enrollees should be randomly selected to be in one arm of the trial or another. The chance of ending up in one group versus another should be equal.

*Intention to treat* means that if a participant in one arm of the trial changes over and starts doing what is prescribed for the other arm (such as taking drug A instead of drug B), that participant should still be analyzed in the results of the group in which he or she started the trial. Both arms should have equal characteristics at the start of the trial. For example, if age and gender are important to the outcome, both groups should be similar in age and gender. You should note if the article indicated if the participants were blinded (they do not know if they are receiving exposure A or B); if the administrators were blinded, which is double blinding; and if the data analysts were blinded (triple blinding). Each arm of the trial should be treated equally. No arm should be given preferential treatment other than the exposure to which they were assigned.

Statistical measures are unavoidable in reading the research literature and give us all heartburn. You do not need to be a statistical whiz, but you should be familiar with some basic statistical procedures such as absolute risk reduction, relative risk reduction, number needed to treat, odds ratio, and correlation statistics such as Pearsons, chi-square, regression, p-values, confidence intervals, power, t-tests, and ANOVA.

Again, you do not have to be able to compute these statistics, just try to familiarize yourself with a basic definition.

Studies are critically appraised to determine their reliability (replicability in other environments) and validity (truthfulness). Various types of bias reduce the reliability and validity of evidence. Some common types of bias are selection bias, which occurs when individuals or groups are more likely to be chosen to participate in a research project than others, funding bias, which occurs when results of the study may be slanted to favor the study's financial sponsor, and publication bias, which generally applies to being inclined toward finding positive results because positive results are generally more often published in the literature.

## Apply

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The most important part of using evidence is applying it to a particular patient encounter or managerial problem. You must use your wisdom along with the best evidence from the research, which you now know how to find. You need to see how well the population that was studied in the research you found matches the patient or problem you are dealing with, and you must also take into consideration local norms, politics, standard practices, and so forth.

## Summary

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The purpose of this chapter is to teach and encourage you to practice with evidence. We have shown you some principles upon which evidence is sorted for quality, pointed you to some excellent evidence resources and some technology tools that are useful in finding evidence at the point of care, and encouraged you to use evidence professionals (librarians). Our desire is that you become lifelong evidence users and truly become information masters.

## Discussion Questions

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1. List five examples of practice changes based on evidence that have occurred in recent years.
2. Compare and contrast two of the nursing-specific database search sites.
3. Discuss the level of evidence scale that you would expect before changing a clinical practice at your facility.
4. What resource or resources are available to help with evaluating sites for consumer health literacy?
5. What resource or resources are available to incorporate information into the electronic health record?
6. What is the nurse manager's role in implementing evidence-based practice?
7. What are some issues that could arise from use of social media in the workplace?

## Glossary of Terms

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**Bibliographic Database**—a searchable collection of citations to publications. The publications may include books, journals, audiovisual materials, and websites. Most bibliographic databases include information about the publication, such as author, title, and copyright date. Often an abstract of the publication is included, but the full text of the article must usually be located elsewhere.

**Case-Control Study**—a retrospective study that collects data from charts, data sets, and patient interviews.

**Case Study**—a detailed analysis of a person or group from a social, psychological, or medical point of view.



- Cohort Study**—an observational study in which a group of people is identified in the present and followed into the future or identified from past records and followed from that time up to the present.
- Electronic Health Record (EHR)**—a systematic collection of health information about individual patients or populations stored in an electronic format.
- Evidence-Based Information (EBI)**—the melding of individual judgment and expertise with the best available external evidence to generate the kind of information that is most likely to lead to a positive outcome.
- Informatics**—a science that combines a domain science, computer science, information science, and cognitive science.
- Levels of Evidence (LOE)**—a method of ranking evidence for better decision making.
- Nursing Informatics**—the study of how electronic information systems are used to improve nursing systems and patient care.
- PDA**—personal digital assistant or handheld computer.
- PICO (Population, Intervention, Comparison, Outcome)**—a method of formatting a focused question resulting in a more productive search and a more relevant answer.
- Proprietary Database**—a privately controlled and distributed database. Access is through subscription or on a pay-per-view basis.
- Randomized Controlled Trial (RCT)**—a carefully designed blinded or double-blinded experiment. Randomized controlled trials are randomized in the sense that everyone who is in the population being studied has an equal chance of being chosen to be in the experimental group (arm) or control group.
- Secondary Literature**—articles that filter the best information from the primary literature.
- Social Media**—forms of electronic communication (as websites for social networking and microblogging) through which users create online communities to share information, ideas, personal messages, and other content (such as videos).
- Strength of Recommendation (SOR) Ratings**—guides to the trustworthiness of information.
- Systematic Review**—a compilation of randomized controlled trials on a single subject.

## References

- Cho, S. H., Lee, J. H., Mark, B. A., & Yun, S. C. (2012). Turnover of new graduate nurses in their first job using survival analysis. *Journal of Nursing Scholarship*, 44(1), 63–70. doi:10.1111/j.1547-5069.2011.01428.x
- Edwards, C. (2012). Nursing leaders serving as a foundation for the electronic medical record. *Journal of Trauma Nursing*, 19(2), 111–114; quiz 115–116. doi:10.1097/JTN.0b013e31825629db
- Florance, V., Giuse, N., & Ketchell, D. (2002). Information in context: Integrating information specialists into practice setting. *Journal of the Medical Library Association*, 90(1), 49–58.
- Fowkes, V., Campeau, M., & Wilson, S. (1991). The evolution and impact of the national AHEC program over two decades. *Academic Medicine*, 66(4), 211–220.
- Gordner, R. (1982). Riding the rural library circuit. *Medical Reference Services Quarterly*, 1(1), 59–74.
- Griffiths, J-M., & King, D. W. (1991). A Manual on the Evaluation of Information Centers and Services. NATO, AGARD, New York: American Institute of Aeronautics and Astronautics. Retrieved from <http://www.dtic.mil/dtic/tr/fulltext/u2/a237321.pdf>
- Haynes, R. B. (2006). Of studies, syntheses, synopses, summaries, and systems: The “5S” evolution of information services for evidence-based health care decisions. *ACP Journal Club*, 145(3), A8.
- Hinson, T. D., & Spatz, D. L. (2011). Improving nurse retention in a large tertiary acute care hospital. *Journal of Nursing Administration*, 41(3), 103–108.
- Holtum, E. (1999). Librarians, clinicians, evidence-based medicine and the division of labor. *Bulletin of the Medical Library Association*, 87(4), 404–407.
- Jensen, M., & Maddalena, B. (1985). Implications of the AHEC library program evaluation: Considerations for small rural hospitals. *Bulletin of the Medical Library Association*, 73(1), 59–61.
- Liang, L. L. (2010). *Connected for health: Using electronic health records to transform care delivery*. San Francisco, CA: Jossey-Bass.
- MacPhee, M., Suryaprakash, N., & Jackson, C. (2009). Online knowledge networking: What leaders need to know. *Journal of Nursing Administration*, 39(10), 415–422. doi:10.1097/NNA.0b013e3181b9221f
- Melnyk, B. M., Fineout-Overholt, E., Gallagher-Ford, L., & Kaplan, L. (2012). The state of evidence-based practice in US nurses: Critical implications for nurse leaders and educators. *Journal of Nursing Administration*, 42(9), 410–417. doi:10.1097/NNA.0b013e3182664e0a

- Munroe, D., Duffy, P., & Fisher, C. (2006). Fostering evidence-based practice in a rural community hospital. *Journal of Nursing Administration*, 36, 510–512.
- National Council of State Boards of Nursing. (2011). *White paper: A nurse's guide to the use of social media*. Chicago, IL: National Council of State Boards of Nursing. Retrieved from [https://www.ncsbn.org/Social\\_Media.pdf](https://www.ncsbn.org/Social_Media.pdf)
- O'Reilly, D., Tarride, J. E., Goeree, R., Lokker, C., & McKibbon, K. A. (2012). The economics of health information technology in medication management: A systematic review of economic evaluations. *Journal of the American Medical Informatics Association*, 19(3), 423–438. doi:10.1136/amiainl-2011000310; 10.1136/amiainl-2011-000310
- O'Reilly, K. B. (2012). The ABCs of health literacy. *American Medical News*. Retrieved from <http://www.amednews.com/article/20120319/profession/303199949/4/>
- Palfreman, J., & Reid, T. R. (2008). Sick around the world (J. Palfreman, Director). In J. Palfreman (Producer), *Frontline*. Boston, MA: WGBH Educational Foundation.
- Pryce, J., Albertson, K., & Nielsen, K. (2006). Evaluation of an open-rota system in a Danish psychiatric hospital: A mechanism for improving job satisfaction and work-life balance. *Journal of Nursing Management*, 14(4), 282–288.
- Reichel, M. (1989). Ethics and library instruction: Is there a connection? *RQ*, 28(4), 477–480.
- Reid, T. R. (2010). *The healing of America: A global quest for better, cheaper and fairer healthcare*. London, England: Penguin.
- Reid, T. R. (2012). *The good news in American medicine* (L. Hartman, Producer). Arlington, VA: PBS.
- Sackett, D. L., Rosenberg, W. M. C., Gray, J. A. M., Haynes, B., & Richardson, W. S. (1996). Evidence based medicine: What it is and what it isn't. *British Medical Journal*, 312(7023), 71–72.
- Shore, R., Halsey, J., Shah, K., Crigger, B. J., Douglas, S. P., & AMA Council on Ethical and Judicial Affairs. (2011). Report of the AMA Council on Ethical and Judicial Affairs: Professionalism in the use of social media. *Journal of Clinical Ethics*, 22(2), 165–177.
- Slawson, D., & Shaughnessy, A. F. (2000). Becoming an information master: Using POEMs to change practice with confidence. Patient Oriented Service That Matters. *Journal of Family Practice*, 49(1), 63–67.
- Sredl, D., Melnyk, B. M., Hsueh, K. H., Jenkins, R., Ding, C., & Durham, J. (2011). Health care in crisis! Can nurse executives' beliefs about and implementation of evidence-based practice be key solutions in health care reform? *Teaching and Learning in Nursing*, 6(2), 73–79.
- Staggs, V. S., & Dunton, N. (2012). Hospital and unit characteristics associated with nursing turnover include skill mix but not staffing level: An observational cross-sectional study. *International Journal of Nursing Studies*, 49(9), 1138–1145. doi:10.1016/j.ijnurstu.2012.03.009
- Thibodeau, P. L., & Funk, C. J. (2009). Trends in hospital librarianship and hospital library services: 1989 to 2006. *Journal of the Medical Library Association*, 97(4), 273–279. doi:10.3163/1536-5050.97.4.011
- Waneka, R., & Spetz, J. (2010). Hospital information technology systems' impact on nurses and nursing care. *Journal of Nursing Administration*, 40(12), 509–514. doi:10.1097/NNA.0b013e3181fc1a1c; 10.1097/NNA.0b013e3181fc1a1c
- Wennberg, J. E. (2010). *Tracking medicine: A researcher's guide to understand healthcare*. New York, NY: Oxford University Press.
- Wilkinson, J., & Daly, M. (2012). Reasons for non-attendance: Audit findings from a nurse-led clinic. *Journal of Primary Health Care*, 4(1), 39–44.
- Williams, L., & Zipperer, L. (2003). Improving access to information: Librarians and nurses team up for patient safety. *Nursing Economics*, 21(4), 199–201.