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Selecting a Model for Evidence-Based Practice Changes

A Practical Approach

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ABSTRACT

Evidence-based practice models have been developed to help nurses move evidence into practice. Use of these models leads to an organized approach to evidence-based practice, prevents incomplete implementation, and can maximize use of nursing time and resources. No one model of evidence-based practice is present that meets the needs of all nursing environments. This article outlines a systematic process that can be used by organizations to select an evidence-based practice model that best meets the needs of their institution.
Keywords: evidence-based practice models, evidence-based practice, models

Factors related to patient safety, quality, and evidence-based practice (EBP) are driving changes in healthcare. Nurses are interested in how to move good evidence into practice to optimize patients' outcomes; thus, nurses may benefit from understanding more about EBP models. These models have been developed to help nurses conceptualize moving evidence into practice. They can assist nurses in focusing efforts derived either from clinical problems or from "good ideas" toward actual implementation in a specific practice setting. Use of EBP models leads to systematic approaches to EBP, prevents incomplete implementation, promotes timely evaluation, and maximizes use of time and resources.

This article describes a systematic process for organizations to use as a template for choosing an EBP nursing model. Strategies for involving staff nurses and clinical and administrative leaders are discussed. Finally, a summary of key EBP nursing models is presented.

Creating Structures or Forums for Discussions

The first step in selecting a model is to establish a structure or a forum in which presentations and discussions can occur about various EBP models, their advantages and disadvantages, and their applicability to organizational needs. Several possible strategies include:

- use of an existing nursing research committee in which selection of an EBP model is added to annual goals and activities;
- formation of an EBP council, with an initial task of selecting an EBP model;
- appointment of a task force charged with selecting an EBP model;
- use of an educational event to increase knowledge about EBP models while facilitating the selection of a model appropriate for the organization; and
- use of a focus group process to select an EBP model consistent with the philosophy, vision, and mission of the organization.[1]

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Any of these strategies could help "set the stage" for an organization to choose an EBP model. For example, the authors used an existing nursing research committee/council to begin the process of selecting an EBP model in 2 different settings. In a third hospital, a multidisciplinary EBP council took on the task of selecting an EBP model. Regardless of the structure or the forum used, a thoughtful and systematic process is helpful.

Composition of the Committee or the Group

The second step to identifying an EBP model is to carefully consider appropriate members of the committee or the group. Administrative and clinical leaders such as nurse managers, clinical nurse specialists, and nurse educators should be represented, as should interested staff nurses. Staff nurses who are clinical resources in their units, share an interest in improving patient care, or are curious about research are likely members. The educational level of the committee members should reflect that of nurses within the department or the institution and will most commonly include nurses with associate, bachelor's, and master's degrees. In addition, members should represent the various clinical units/departments or specialties within the institution.

Involvement of persons with special expertise in research or EBP, such as a nurse researcher or faculty member from a local unit, hospital, or school of nursing, may be especially helpful. These persons may be internal or external to the organization and have valuable expertise in EBP nursing models. They can function as active members or as consultants. A librarian member may also be useful in retrieving needed publications to evaluate selected models.

The evaluation process and the number of EBP models that are considered can influence the desirable number of committee members. For example, at one institution (a university academic hospital), the nursing research council selected 7 EBP nursing models for review and evaluation. Table 1 lists the models and shows the criteria used to evaluate them. These 7 models were chosen for evaluation either because they were commonly mentioned in publications about EBP nursing models or because they were identified by committee members. At another institution (a community hospital), the nursing research council selected 4 EBP nursing models to evaluate on the basis of council members' knowledge of the models' utility and potential fit with the organization.

Involvement of all committee members in the evaluation process is vital. Using a process where 2 or 3 persons volunteer to review and present 1 to 2 EBP nursing models can get all members involved. Staff nurses can be paired with administrative or clinical leaders in teams of 2 to 3 persons. All committee members can then participate in the process of evaluating models by attending presentations about each model and actively participating in discussions. By having small groups present each model, the workload is divided among group members. The more people involved in the process, the greater the need for coordination and oversight by the chairperson.

Organizing the First Meeting

Once the group has been selected, the next step is to organize the first meeting so that clear communication about the roles and responsibilities of team members can occur. The chairperson or the leader can survey the group members to determine the optimal date, time, and comfortable location for this meeting. Because of the nature of the work involved in selecting a model, 2 hours is an optimal duration for meetings. An agenda should accompany the meeting invitations and initially will include items such as discussions of the purpose and goals of the committee and the roles and responsibilities of committee members (Table 2). Providing a brief reading assignment that gives an overview of EBP models and should be completed before the first meeting is advisable. The chairperson can request committee members who are already knowledgeable about EBP models to highlight parts of the reading assignment at the first meeting to promote discussion. The chairperson should also collaborate with unit leaders to ensure that staff nurses have appropriate release time for meetings.

Roles and Responsibilities of Committee or Members

At the first meeting, roles and responsibilities of the members for reviewing, presenting, and evaluating each EBP model should be addressed. Assignments and due dates are determined to ensure steady progress. For example, a member can elect to work in a small group to review the literature on an EBP

Table 1: Evaluation Criteria and Scoring for 7 Models of Evidence-Based Practice Changes[a]

Evaluation Criteria for EBP Model

Purpose of Project: Evaluation and selection of an EBP model for the Nursing Department of Ronald Reagan University of California, Los Angeles Medical Center.

1. Search, retrieve, and synthesize the current literature describing EBP models to help staff nurses use EBP concepts and apply them in clinical practice.
2. Recommend the adoption of a specific EBP model for use by UCLA nurses.

Scoring system: 0 = not present; +1 = present/yes; +2 = highly present/yes

Criteria	Models						
1. Concepts and organization of model are clear and concise							
2. Diagrammatic representation of the model allows quick assimilation of concepts and organizes the steps in the process of EBP changes							
3. The model is comprehensive from beginning stages through implementation and evaluation of outcomes							
4. The model is easy to use when concepts are applied to direct EBP changes and practice issues in clinical settings							
5. The model is general and can be applied to various populations of patients, EBP projects, and department initiatives and programs							
6. The model can be easily applied to typical practice issues as evidenced with practice scenario or in published literature							
Total							

	Comments
EBP Model:	Strengths: Weaknesses:
EBP Model:	Strengths: Weaknesses:
EBP Model:	Strengths: Weaknesses:
EBP Model:	Strengths: Weaknesses:
EBP Model:	Strengths: Weaknesses:

[a]Used with permission from the Evidence-Based Practice Program, Nursing Department at Ronald Reagan University of California, Los Angeles Medical Center, Los Angeles, California.

Table 2: Example of Agenda Items for the First Evidence-Based Practice Committee or Group Meeting

Welcome and introduce members
Review agenda
Discuss the goals of the committee
Discuss roles and responsibilities of committee members
Select models for evaluation
Discuss the process for presenting and evaluating evidence-based practice models
Make assignments and schedule
Identify resources and forms
Identify strategies to communicate ongoing committee work to the department
Open discussion of other items
Plan for next meeting

model. Work teams should be assigned a presentation date to present details of the reviewed EBP model to committee members. Presentations of each EBP model may take 30 to 45 minutes and might include information on the history and development of the EBP model (who, what, when, where, and how), revision of the model over time, overall concepts in the EBP model, the process and flow of the EBP model, and publications describing how the model guided EBP changes in other facilities.

Each presentation of an EBP model can be followed by 10 or 15 minutes for group members to raise questions and discuss specific aspects of the EBP model. After the presentation and discussion, group members could review an example of how the EBP model might be applied in a realistic practice scenario that requires consideration of a practice change (Table 3). Group members could then use the EBP model under discussion to address the practice issue. Depending on the group's size, this work can be done in small groups, with each small group slated to report back to the larger group its opinion about how the model "worked." It is recommended that groups break into smaller groups of 2 or 3 persons to "rate" the models' applicability on the basis of predetermined criteria (Table 4). Criteria for evaluating the applicability of the EBP model should include clarity of the EBP model concepts and diagrammatic representation, applicability of the EBP model to clinical practice issues for diverse patient care situations in the institution, ease and user-friendliness of the EBP model, and the ability of the EBP model to provide direction for all phases of the EBP process.

Table 1 shows an example of an evaluation tool that can be used by committee members when reviewing each EBP model. After the evaluation instrument is administered and scored, committee members can compare and contrast the ratings, strengths, and weaknesses for addressing the practice scenarios, and potential adoption by the institution for each model is reviewed.

The use of a structured process provides members with little or no background in evaluating an EBP model to learn about EBP models and have greater participation and support in the evaluation process. The link of the EBP model to practice is clear when the practice scenario is used. Members increase their knowledge and skills in using EBP models for practice changes and become champions for the adoption of a model within the organization.

Finally, the ongoing work of the committee should be communicated through forums such as mass e-mails, newsletters, posters, nursing grand rounds, and other continuing education programs. Such communication helps disseminate the process used in selecting a model for the organization, while inviting others to participate via comments and feedback.

Summary of Selected EBP Nursing Models

A number of EBP models have been developed; many appear very different from each other. Some of these models are more useful in some contexts than others, and each has advantages and disadvantages. The following steps or phases are common to most models:

- Identification of a clinical problem or potential problem
- Gathering of best evidence
- Critical appraisal and evaluation of evidence; when appropriate, determination of a potential change in practice
- Implementation of the practice change
- Evaluation of practice change outcomes, both in terms of adherence to processes and planned outcomes (eg, clinical, fiscal, administrative)

Table 3: Sample Practice Scenario for Evaluating Applicability of Models for Evidence-Based Practice Changes[a]

Scenario for Application of Evidence-Based Practice Nursing Models

Note: The following scenario includes selected literature on the subject for the purpose of providing a clinical practice issue for use when applying EBP models. The following does not include an extensive or integrated review of the literature on the subject.

Clinical Issue

Suctioning patients who have endotracheal and tracheal tubes is a frequent and important nursing intervention. These tubes interrupt the normal mucociliary system and can result in a patient's inability to mobilize and expectorate secretions).[13] Suctioning is an intervention that has beneficial effects such as removal of secretions, maintenance of airway patency, and promotion of optimal ventilation and oxygenation.[13]

It is common practice for nurses and other healthcare providers to instill 3 to 10 mL of sodium chloride in the endotracheal or tracheal tubes before suctioning.[14] The action of sodium chloride is believed to loosen and thin secretions, stimulate a cough, and lubricate the suction catheter.[13,15,16]

Research and Evidence-Based Literature

Results of research on the benefits of sodium chloride instillation have been inconclusive.[13,17–23] In fact, studies indicate that this practice may result in the following adverse outcomes:

- Interferes with the alveolar-capillary oxygen exchange, causing a decrease in oxygen saturation,
- Increases rate of respiration,
- Increases the risk of infection by dislodging significantly more bacterial colonies, and
- Increases intracranial pressure.[13,19,21,22]

Furthermore, patients can panic or feel as though they are drowning during routine instillation of sodium chloride via endotracheal or tracheal tubes.[24]

Research results indicate that mucus and sodium chloride solution are immiscible.[13,17] Therefore, it is unlikely that instillation of sodium chloride loosens secretions and aids in the expectoration of airway secretions.[13] The application of heat and humidification to the airway and the use of sodium chloride nebulizers are effective in thinning secretions and promoting airway clearance.[13,23]

Nursing Staff and EBP Process

The nurses in your unit have recently heard a lecture presenting the lack of evidence supporting the routine use of instillation of sodium chloride before suctioning patients with endotracheal and tracheal tubes and the potential deleterious effects. They are questioning this practice and come to you as the unit manager or the clinical nurse specialist to help them with considering a change in this practice.

Reflect on this EBP model to guide you through the steps to help your staff with this EBP change project.

[a]Used with permission from the Evidence-Based Practice Program, Nursing Department, Ronald Reagan University of California, Los Angeles Medical Center, Los Angeles, California.

Table 4: Criteria for Evaluation of Evidence-Based Practice Models to Meet Institutional Needs

Concepts and organization of the model are clear and concise
Diagrammatic representation of the model allows quick assimilation of concepts and organizes the steps in the process of EBP changes
Model is comprehensive from beginning stages to implementation and evaluation of outcomes
Model is easy to use when concepts are applied to direct EBP changes and practice issues in clinical settings
Model is general and can be applied to various populations of patients, EBP projects, and department initiatives and programs
Model can be easily applied to typical practice issues as evidenced with practice scenario or in the published literature

Abbreviation: EBP, evidence-based practice.

Table 5: Selected Evidence-Based Practice Nursing Models and Key Components

	Iowa Model[3]	Stetler's Model[2]	Rosswurm and Larrabee's Model[4]	Johns Hopkins Nursing Model[5]	ACE Star Model of Knowledge Transformation[6]
Emphasis	Organizational process	At individual nurse or organizational level	Organizational process	Organizational process	Knowledge transformation
Stages/ phases	1 Trigger: Problem or new knowledge 2 Organizational priority? 3 Team formation 4 Evidence gathered 5 Research base critiqued and synthesized 6 Sufficient? 7 Pilot change 8 Decision? 9 Widespread implementation with continual monitoring of outcomes 10 Dissemination of results	1 Preparation 2 Validation 3 Comparative evaluation 4 Decision making 5 Translation/ application 6 Evaluation	1 Assess need for change in practice 2 Link problem interventions and outcomes 3 Synthesize best evidence 4 Design practice change 5 Implement and evaluate change in practice 6 Integrate and maintain	1 Practice question identified 2 Evidence gathered 3 Translation: Plan, implement, evaluate, and communicate	1 Knowledge discovery 2 Evidence summary 3 Translation into practice recommendations 4 Integration into practice 5 Evaluation

The following paragraphs describe several EBP models that are often considered for use in hospitals (Tables 5 and 6). These models were selected on the basis of the following criteria: (1) they commonly appear in nursing publications about EBP models; (2) published reports support their use to guide EBP changes in the clinical setting; (3) institutions (hospitals or schools of nursing) use the model; and (4) the models are intended to be used by nurses as they set out to find and use evidence to enhance patients' or organizations' outcomes. Table 5 describes selected EBP models that have specific steps or phases to guide the EBP process. Table 6 identifies key components of EBP models that do not have specific steps or phases but help describe and conceptualize the many variables and interactions that occur when making EBP practice changes.

One of the oldest models that has recently been revised to include EBP outcomes is Stetler's EBP model.[2] This model is one of the few that does not focus entirely on formal changes led by nurses in organizational settings, suggesting use by individual nurses as well. Developed as a model for nurses within an East Coast hospital, Stetler's model promotes use of both internal (eg, data from quality improvement, operational, or evaluation projects) and external (primary research evidence and consensus of national experts) evidence. Stetler's model consists of 5 phases, ranging from searching for evidence about a clinical problem to formal and/or informal evaluations. Decision making about whether a practice change should be made includes consideration of substantiating evidence, setting fit, feasibility, and current practice.

Developed as a model to promote quality care, the Iowa model of EBP has been used in multiple academic and clinical settings.[3] This model melds quality improvement with research utilization in an algorithm that nurses find intuitively understandable. Unique to the Iowa model is the concept of "triggers" of EBP. Evidence-based practice may be spurred by a clinical problem or by knowledge coming from

Table 6: Select Evidence-Based Practice Frameworks

	ARCC Model[7–9]	PARIHS Framework[10,11]
Key focus	Organization of department or unit	Understanding key components of EBP
Key concepts	EBP mentor—an individual who has expert knowledge and skills in EBP and the passion to help others practice daily from an evidence base	Evidence Context Facilitation
Major proposition	The development of APNs and other nurses as EBP mentors facilitates an organizational culture change toward evidence-based care	Practice changes are most likely when they are based upon robust evidence, conducted in a context "friendly" to change, and facilitated well
Utility—practical implications	Need to… • assess and organize culture and readiness for EBP • identify strengths and major barriers to EBP implementation • implement ARCC strategies • develop and use EBP mentors • interactive EBP skill-building workshop • make EBP rounds and form journal clubs • implement EBP • improve patient, nurse, and system outcomes	Need to… • critically appraise evidence • thoroughly understand the practice arena before implementing a change • make a strategic plan for facilitation of any practice change—from development to implementation and evaluation

Abbreviations: ARCC, Advancing Research and Clinical Practice through Close Collaboration; EBP, evidence-based practice; PARIHS, Promoting Action on Research Implementation in Health Services.

outside an organization. Either of these triggers can set an EBP project into motion. Thereafter, the model delineates 3 key decision points during the process of making a practice change: (1) Is there an institutional reason to focus on this problem or use this knowledge? (2) Is there a sufficient research base? (3) Is the change appropriate for adoption in practice? At 2 of these points, users must focus on the realities within an organizational context; the third point infers the possibility that evidence is not sufficient and thus that a research study may be needed or other evidence sought.

Rosswurm and Larrabee[4] developed a 6-step model for change in EBP that aims for integration of EBP into a care delivery system. The initial need for change is determined by comparing internal data such as quality indicators with data from outside the organization. When possible, this problem is linked to standard interventions and outcomes. Research and contextual evidence are sought to solve the problem and combined with clinical judgment. With sufficient evidence, a practice protocol is developed and a pilot test done to determine effects on outcomes. With widespread implementation, both processes (eg, staff adherence to the change) and clinical outcomes are evaluated. The practice change is maintained by using theoretically derived diffusion strategies.

The Johns Hopkins Nursing EBP model was developed in collaboration with the Johns Hopkins Hospital and the Johns Hopkins University School of Nursing.[5] To ensure that current research findings were incorporated into patient care, nursing administrative leaders from Johns Hopkins Hospital developed a model for the department of nursing. The resulting model addressed the following 3

domains of professional nursing: nursing practice, education, and research. The model incorporates use of available evidence as a core component for decision making within these domains. Guidelines for the model reflect the "PET" process, an acronym that stands for *practice question, evidence*, and *translation*. First, a team identifies an important practice question. The team gathers evidence by reviewing literature, rates the evidence, and makes recommendations for changes in processes of care or systems. The last phase is the translation in which a plan of action is developed and implemented and outcomes are evaluated and communicated.[5]

The ACE Star Model of Knowledge Transformation aims to promote EBP by depicting knowledge types (from research to integrative reviews to translation) as necessary precursors to practice integration.[6] This model does not discuss use of nonresearch evidence. The 5 major stages of knowledge transformation are (1) knowledge discovery, (2) evidence summary, (3) translation into practice recommendations, (4) integration into practice, and (5) evaluation. The goal of the process is *knowledge transformation*, defined as "the conversion of research findings from primary research results, through a series of stages and forms, to impact on health outcomes by way of [evidence-based] care."[6]

Another EBP model that is considered a "mentorship" model is the Advancing Research and Clinical Practice through Close Collaboration model. This EBP model resembles an organizational plan for a department of EBP. The model focuses on establishing relationships across systems to bring experienced researchers together with clinicians to integrate research and clinical practice more fully.[7] Originally an organizational model for linkages between a college of nursing and a medical center, the model relies heavily on EBP mentors, ideally advanced practice nurses, with in-depth knowledge of EBP and expert clinical and group facilitation skills.[7–9] This model may be most useful in academic settings with formal linkages between nursing education and practice in which APNs are abundant.

Out of the British system comes the Promoting Action on Research Implementation in Health Services framework,[10,11] which is "useful as a heuristic device to help make sense of the many variables and interactions that take place in practice."[12(pS1)] This intuitive model aids in understanding the key components of EBP: evidence, context, and facilitation. The model aims to represent the complexity of making practice changes on the basis of evidence. The key proposition in the model is that "the nature of the evidence, the quality of the context, and the type of facilitation all impact simultaneously on whether implementation is successful."[11(p178)] Further understanding of the relationships among evidence, context, and facilitation is needed to maximize EBP. This model, though very useful as a theoretical explanation, has not been documented as useful in driving projects within organizations.

Selection of EBP Model for the Institution

After evaluation of each of the EBP models, committee members should be able to narrow the selection of these models to 1 or 2 models. This can be done by selecting the top 2 models with the highest scores on the evaluation tool and by discussions that facilitate group consensus.

If 2 models score similarly on the evaluation tool, having members discuss general advantages and disadvantages of each of the models can help delineate the model that "fits" the needs of the organization best. For example, the group members might discuss advantages and disadvantages of the models reviewed and make the final selection on the basis of (1) how easy the EBP model was to understand and whether it would guide users in the EBP process; (2) appropriate direction by the model for the conduct of research when evidence is insufficient to support a practice change; (3) the flow of steps in the model is similar to the flow of practice algorithms for staff; and (4) decision points in the EBP model would provide users with opportunities for thoughtful reflection and decision making.

To maximize leadership buy-in, nurse managers, administrators, and clinical leaders who are not part of the selection committee should also be included in the evaluation and selection process. This can be accomplished by having members of the nursing research committee attend leadership meetings to present either the final model or the final 2 models determined by the selection committee. Leadership members can then participate in the exercise of evaluating and scoring the final model(s) by using the practice scenario. The management group can then discuss the results,

advantages, and disadvantages, and make final recommendation for adoption. Including broader nursing leadership representation in the selection of an EBP model would build consensus and promote support of the adopted model. If the initial committee is having trouble making a decision, leadership input can help break a tie or may result in new insights as to why one model might fit better than another.

Dissemination and Integration of the Selected Model

Once the model is chosen, the committee can brainstorm strategies to promote its dissemination and use. Educational sessions that are planned should use active participation of learners to enable participants to increase their knowledge and skills in using the model to answer clinically important questions that require evidence-based solutions. Several strategies can be used for dissemination and integration of the selected model:

- Incorporating a class about EBP and the selected model into the new graduate orientation or residency program. This ensures that each new employee has basic knowledge about the use of the selected model.
- Add content about use of the EBP model in preceptor development programs. Preceptors are often clinical leaders in their respective units. Enhancing their knowledge and skills about EBP models can increase the likelihood that preceptors will serve as agents of change and champions of EBP within their clinical areas.
- Incorporate education and skill building on use of the selected EBP model into the annual skills laboratories or competency forums. This strategy ensures wider dissemination of the selected model and aids in establishing baseline knowledge and skills for all nurses throughout the organization.
- Conduct nursing grand rounds on the selected model, with examples of use of the model in clinical practice. Grand rounds can provide a forum for more in-depth knowledge and skill building with respect to use of the model. Examples of how the model can be used to answer important clinical practice questions can also be presented and discussed. Feedback can be obtained from the grand rounds participants about the clarity and feasibility of using the model for the EBP process. Ideas can be elicited from the participants about strategies to overcome challenges to using the model.
- Provide EBP programs for the nursing leadership group. The program should introduce this group to more extensive concepts of the model, involve them in several examples of how to use the model for both administrative and clinical changes, and discuss their role in increasing use of the model in their respective areas. The infrastructures available to facilitate use of the model should also be discussed.
- Implement special "train-the-trainer" EBP development programs. Content about various innovative methods to teach others about the model should be included, along with a general discussion of the structure, concepts, and processes of the model.
- Include content in institution-sponsored research and EBP conferences by selecting programs that increase participants' knowledge and skill building relative to the use of the model for EBP practice changes.
- Integrate the selected EBP model into the curriculum of any existing EBP immersion programs, such as an EBP internship or fellowship programs.
- Encourage members of the nursing research committee/council to brainstorm additional ideas that work best in their respective units, institution, and nursing culture. Members can examine what educational programs and forums already exist that could be used to disseminate and integrate the model in the organization.

Summary

Using a model for EBP change will assist nursing departments to better focus their limited fiscal and personnel resources on critical EBP activities. This article described structures and processes that institutions could use to facilitate choosing a model for EBP change that fits their practice setting and guides efforts in making EBP changes.

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