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Clinical excellence through evidence-based practice -- a model to guide practice changes

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Clinical Excellence Through Evidence-Based Practice - A Model to Guide Practice Changes

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Abstract & Introduction

Abstract

This article describes the development and implementation of an evidence-based practice model, *Clinical Excellence Through Evidence-Based Practice*,which incorporates the essential components that should be considered before implementing a practice change. This model provides the framework for a process that can be easily adapted for use in any organization or setting. An explanation accompanies the visual representation of the model as well as a worksheet for the nurse or work group to use as a tool to document the critical appraisal process.

Introduction

Because of their role, education, and the respect they have earned, advanced practice nurses (APNs) are in an ideal position for leading evidence-based practice changes. The purpose of this article is to share the *Clinical Excellence Through Evidence-based Practice* (CETEP) model (Figure 1), and a process for using this model to guide practice changes. This model can be adapted for use in any organization and setting.

Figure 1. *Clinical Excellence Through Evidence-based Practice* (CETEP) model

Putting research into practice is no simple task. Many years pass before information acquired from research studies is applied at the bedside. Translation of research to practice is more complex than simply writing a policy or procedure based on a research study and expecting staff to comply. Successful integration of research into practice requires critical appraisal of study methods and results, and most importantly, consideration of the *applicability* of the evidence to the particular clinical setting. The assessment of applicability is imperative before evidence can be used within the organization. Qualitative considerations, such as patient preferences, must be assessed before the evidence can be determined to be applicable.

The strongest evidence is often considered to be large randomized clinical trials. However, when large numbers are aggregated and a mean is presented as the gold standard, the variable of the human condition is lost. The CETEP model and process emphasize evaluation of the applicability of the evidence for the clinical practice setting.

Creation of the Model

The CETEP model was developed by the South Miami Hospital Research Committee. South Miami Hospital is a part of Baptist Health South Florida, an organization composed of 5 hospitals, numerous outpatient centers, and a home health division. The model and process described in this article have now been adopted by the organization as a whole.

During the early 1980s, "translating research into practice" was a common topic of professional conversation at our nursing research committee meetings. At that time, there were few national practice guidelines, no core measures, and the phrase "evidence-based practice" was not yet a buzzword. We reviewed journal articles, attended conferences, and created a process to systematically examine practice in our setting and compare it to the literature.

In the 1990s, when the concept of *evidence-based practice* was replacing *research utilization*, we began development of a model that would provide the framework for developing best practices within our institution. We reviewed existing literature and models and identified additional components believed to be vital in developing, reviewing, and/or revising patient care practices.[1-11]

The model is organized to resemble the components of the nursing process:

- Define the clinical practice question;
- Assess the critical appraisal components;
- Plan the implementation;
- Implement the practice change; and
- Evaluate the practice change.

Nursing research and the other critical appraisal components interweave with one another in a cycle of inquiry, thus we added the phrase, *A Continuous Cycle of Inquiry*, under the title of the model to emphasize this cyclic or fluid process vs a linear process. Clinical excellence is not static, it is always changing as new questions arise, as clinical situations change, and as new evidence is realized and translated into practice.

The Evolving Model

The various components of the CETEP model were added over several years as we gained more experience using it as a guide for writing new policies, procedures, and guidelines or revising existing ones. Because we live in a culturally rich community, contemplation of the *Cultural Implications* of a practice change was one of the first items added to the model draft.

Without doubt, the *Cost-Benefit Ratio* of a practice must be addressed. Nevertheless, despite evidence showing cost savings and improved patient outcomes, some practices continue to be difficult to change. For instance, the evidence shows that the costs to support a dedicated vascular access team are off-set by improved patient satisfaction and a reduction in phlebitis and infection; yet, investing in this resource is not the standard of care in many institutions.[12-14]

Another addition was *Regulatory/Accrediting Requirements* to coincide with The Joint Commission's (see Resource list) more intense focus on clinical practice issues. *Patient Safety* was added when the National Patient Safety Goals were introduced by The Joint Commission.

When South Miami Hospital merged with other hospitals to become Baptist Health South Florida, we added *System Wide Initiatives* as a reminder to check if another entity was working on the same issue. *Key Stakeholder* was added to insure greater success and reduce sabotage; key stakeholders should be involved in designing or approving the practice change. *Quality Indicators* (eg, core measures and other national quality initiatives) were added because practice changes that would impact quality indicators would be highly desirable and thus receive substantial support from the organization.

Receptiveness issues. Certainly, staff reluctance or even outright resistance to the proposed practice change can undermine its implementation, regardless of how well-founded the basis for the change (see Addendum A: Use of Local Anesthetic for Intravenous (IV) Starts). Therefore, during the assessment phase, possible reasons that staff might resist the change should be discussed and addressed.

In the model, under the heading of *Clinical Setting Factors*, we use the term *Receptiveness Issues* rather than the negative-sounding term *resistance*, because disagreement with a change is not necessarily resistance to the change when individual or groups protesting the change have valid concerns and offer constructive criticism. Possible reasons why attempts to change practice fail include when the individual or group[15]:

1. Perceive the change as a threat to job security, job status, income, competence (ability to perform the practice), or relationships;
2. Do not understand why the practice should be changed;
3. Receive inadequate education about the change;
4. Were not involved in decisions about the change;
5. Believe that the change was not for the better;
6. Believe that the potential benefits are not worth the effort;
7. Believe that the change adversely impacts work flow; and/or

8. Believe that too many changes are happening too close and with little planning.

Model implementation. When we began to use the model, we quickly determined that we should explain the steps of the model in more detail. We put this elaboration on the reverse side of the model and laminated it before hardcopy distribution (see Addendum B: Elaboration of the BHSF Clinical Excellence through Evidence-Based Practice Model).

We created a work sheet after nurses began attaching copies of research articles and handwritten notes to their policy, procedure or guideline revisions, such as "consulted with legal" or "attended the pain committee meeting to discuss this practice." The work sheet follows the outline of the model's steps and serves as a prompt for asking key questions and insuring that important aspects of a proposed practice change have been addressed. An abbreviated version of the work sheet is used for policies, procedures, and guidelines requiring minor changes.

Process for Using the Model

Define the Clinical Practice Question

In using the model, the first step is to clearly define the clinical practice question as doing so will considerably simplify the process of searching for answers. Most clinical practice questions fit into the following format:

1. Which patients would be affected?
2. What new treatment or practice is involved?
3. What old practice would this replace?
4. What are the expected outcomes?

For example, will using chlorhexidine rather than povidone-iodine to clean the skin prior to the insertion of a central line reduce the incidence of central line infections? In this example:

1. The patients are those having the central line inserted;
2. The new practice is using chlorhexidine;
3. The old practice was using povidone-iodine; and
4. The expected outcome is a reduction in the incidence of central line infections.

Assess the Critical Appraisal Components

Once the clinical practice question has been identified, the next step is to gather and critically appraise the evidence. Every nurse in our healthcare system has easy access to online resources through the library's intranet website. The library staff responds to information requests from nurses within an average 24-48 hour turnaround time, including emailing articles needed for research and evidence-based practice. The library's electronic resources include access to:

- Springhouse Procedures;
- Cumulative Index to Nursing and Allied Health Literature (CINAHL);
- Cochrane Database of Systematic Reviews;

- Ovid Essential Nursing Journal Collection;
- Lippincott Manual of Nursing Practice;
- Nursing Drug Guide; and
- Micromedex.

All resources have been integrated into a Web-based online catalog and the journals are integrated into the CINAHL and Medline databases.

The library director is active on research councils and is published in the library literature.[16] The library also offers tutorials, classes, and one-on-one coaching with nurses and teaches in the BHSF Evidence-based Practice Fellowship Program. Our intranet includes a nursing research section to which we added several tools to aid nurses in appraising research and evidence. We conduct periodic workshops and hold an annual research conference with a focus on evidence-based practice. In addition, nurses are encouraged and supported to attend outside conferences and to present their work.

Once the soundness of the evidence has been assessed, the next step is to determine the applicability of the proposed practice to the patient population and the clinical setting. Questions to be answered might include:

1. Will our patients accept this practice?
2. Will implementing this practice improve patient safety?
3. Will this practice affect resources, staffing, or the processes of another department?
4. Will this practice affect the purchasing contracts of pharmacy or central supply?
5. Will this practice impact nursing time?
6. Will clinical experts be necessary to carry out this practice or to teach others to perform the skill?
7. Are there any ethical or legal aspects of this practice that should be considered?
8. Would an internal or external disaster impact on this practice?
9. Will this practice contribute to our health system's commitment to be environmentally responsible and energy-efficient?

Plan the Practice Change

Obtain approvals. Once a proposed practice change passes the critical appraisal, the sponsor assures that those who would have to approve the change are in agreement. For instance, when the Cancer Committee revised the standard antiemetic protocol for chemotherapy following the publication of new national guidelines, the rationale was discussed at the Pharmacy and Therapeutics Committee and an approval obtained to place the drugs on formulary.

Once the key stakeholders and approval bodies have agreed with the new practice, the final sign-off comes from the Evidence-based Clinical Practice Council (EBCPC). The EBCPC is charged with the oversight and approval of policies, procedures, and guidelines that impact clinical practice. This group meets monthly and comprises:

- Advanced practice nurses;

- Clinicians;
- Educators;
- Staff nurses; and
- Performance improvement nurses.

Before the new practice comes to the council, the work sheet and supporting evidence is reviewed and evaluated by a volunteer reader from the Research Council. A proposed practice change will not go any further if the evidence supporting it is missing or weak. Once evidence is substantiated, the policy, procedure, or guideline is scheduled for presentation to EBCPC. Submissions that involve major changes in practice are reviewed prior to the meetings by a content expert in order to save time. We implemented the pre-review process because the EBCPC meetings were lasting many hours as members debated every nuance of a practice change. With this pre-review, most of the kinks are worked out before the meeting.

Decide if a pilot is indicated. Included in the planning aspect of a practice change is determining if the practice should be piloted on 1 or more units before considering it for hospital or systemwide application. Conducting a pilot before involving the entire institution can be very useful and save resources in the event the practice fails. This approach is especially crucial when considering the purchase of expensive equipment or if an extensive educational initiative will have to take place to implement a new practice.

Determine the method of communication and education. Determine during the planning phase how the practice change will be communicated. The best practice ever conceived will fail if the staff is not adequately educated *before* the change occurs. The information must be communicated to all those impacted by the practice including other departments. This can be quite challenging if the organization is large or if the policies, procedures or guidelines to be implemented are complex or numerous.

Using *who, what, when, where*, and *how* is a useful template to plan the education. What is to be taught must be clearly identified at the outset. Many of our units have clinicians who are responsible for educating staff about practice changes. Multiple channels of communication can be used to communicate practice changes such as posters, meetings, e-mail messages, and bulletin boards. In our facility, every department and nursing unit has a brightly colored binder titled *WINK (What I Need to Know)* to help communicate and catalog new practice changes. Each month a new WINK is published and distributed along with a sign-in sheet. The information is presented in a succinct and attractive format following a template to ensure consistency. Being succinct is key because staff do not have the time to read a lengthy tome.

One of our most successful ways to communicate practice changes is at annual or biannual Clinical Skills Fairs. Not only does this method allow the participants to demonstrate their knowledge, but also competency can be measured to a certain extent. Based on the fundamental concept that learners remember more when they are involved in the learning, the events are highly interactive and involve all the senses.[17]

No "talking heads" are permitted. The organizers for each station at the fair are challenged to create an activity around a central theme. The theme for our most recent fair was tropical. We

played tropical music, decorated accordingly, and encouraged festive dress. Each station chose a tropical icon and created an activity with the icon included. For example, the Dolphin Station created an activity in which the outline of a dolphin was printed on 8 1/2 by 11 inch paper along with numerous medical and nursing abbreviations. The participants were instructed to circle the "Do Not Use Abbreviations." Activities are quick and to the point.

The Flamingo Station created Flamingo Bingo in which the players demonstrated their knowledge about the data being collected on the nursing units. Other interactive activities included a bean toss game to demonstrate the proper methods of disposing pharmaceutical waste; a patient identification game using stuffed animals with correct and incorrect ID bands; and a card sort activity in which the participants chose the correct patient safety statement cards from an assortment of correct and incorrect cards.

Implement the Practice Change

The greatest challenge is in the implementation phase --"Where the rubber meets the road." Implementation strategies should be discussed and planned before rolling out a new practice. Despite careful planning, it is not uncommon that factors critical for successful implementation are overlooked or underestimated (see Addendum c: Bath in a Bag). Furthermore, implementing a new practice requires coordination across the organization and with vendors to be sure that everyone who should be involved is on track with the practice change.

Another element to consider is to identify an individual or a group, such as the clinical educators, who would serve as the coordinating body for the implementation phase of a new practice. In our setting, the clinicians have this role and ensure that new practice changes are scheduled for roll out in reasonable time frames so that staff members are not overwhelmed. The clinicians are also responsible for overseeing the educational requirements and competencies of their specific department or unit staff.

Evaluate the Practice Change

The expected outcomes of a practice change should be made explicit when the clinical practice question is formulated. Will using chlorhexidine rather than povidone-iodine to clean the skin prior to the insertion of a central line reduce the incidence of central line infections? The expected outcome is a reduction in the incidence of central line infections. How and by whom will this be measured and reported?

Once the practice is implemented, feedback from the nursing staff and related users is encouraged via the EBCPC and other appropriate committees or councils. If new evidence is submitted, the cycle begins again. Further, all practice policies, procedures and guidelines are put on a regular schedule for review to ensure quality and meet regulatory requirements.

Conclusion

The result of this work is a user-friendly model that not only focuses on using research to improve practice, but is also a model that incorporates many of the essential components that

must be considered before changing practice at the bedside. In following the steps of the CETEP model, nurses and other professionals gather the best evidence and then carefully examine the other elements noted on the model before suggesting a practice change.

Within BHSF, evidence-based practice starts with questions about a particular practice. The cycle starts over again with questions raised as nurses continue to evaluate and appraise their practice. Nurses are encouraged to conduct research and use evidence that will have meaning for their practice. They are applauded for being experts in their areas of specialty and encouraged to examine their practice to identify problems. Addressing practice problems or evaluating changes in practice with this model is empowering. When nurses are actively engaged in research and use evidence to make changes in their practice, they benefit by a sense of control over their practice. More importantly, the patient and the community as a whole benefit from this level of excellence.

Appendices

Addendum A: Use of Local Anesthetic for Intravenous (IV) Starts

An example of a seemingly easy practice change based on research is the use of a local anesthetic when performing venipunctures. The research clearly shows that using a local anesthetic reduces the pain of venipuncture compared with using nothing, and intradermal lidocaine or intradermal bacteriostatic saline convey equal anesthesia.[18-21] Nevertheless, few hospitals have incorporated this practice into their routine. Some hospitals do use a local anesthetic for IV starts in the perioperative and/or endoscopy settings yet in the rest of the hospital, no anesthetic is used. The Joint Commission may cite the organization for having different standards of care in the institution.

At South Miami Hospital, it has been the standard of care to use lidocaine for IV starts for about 20 years. Recently, that policy was revised to switch to bacteriostatic saline based on an increasing number of good studies showing the equal efficacy of bacteriostatic saline (the preservative, benzyl alcohol, has local anesthetic properties). Furthermore, even though this error has never occurred in this setting, it was postulated that patient safety would be enhanced by decreasing the risk of a nurse inadvertently picking up a lidocaine vial and using that solution to flush a line. This seemingly innocuous policy change is being resisted by some nurses who report. "I'm just used to using lidocaine." or "I think lidocaine works better." Another concern is that perhaps some nurses are not using any anesthetic.

Addendum B: Elaboration of the BHSF Clinical Excellence through Evidence-Based Practice Model

Define the Clinical Practice Question

- Clearly state the question including expected outcomes e.g., Will using chlorhexidine rather than providone-iodine to clean the skin prior to the insertion of a central line reduce the incidence of central line infections?

Assess Critical Appraisal Components

- Evidence-based Factors
    - Research: Does research exist to support the practice and has this research been critiqued? Does our population match the research population?
    - National guidelines: Are there any national guidelines from specialty organizations about this practice?
    - Quality indicators: Are there national initiatives based on evidence that factor into this practice? Will the practice have an impact on core measure performance or other quality indicators? Is research relevant to the practice being conducted within the hospital or health system? Is data being collected that could contribute to supporting the practice?
    - Opinion Leaders: Are there nationally recognized experts internally or externally, and should we consult them?
- Patient Factors
    - Patient History and Condition: Is there anything about a specific patient's or patient group's history or condition that would preclude using this practice?
    - Patient preferences: What is the anticipated reaction of patients and families to this practice? Will the practice influence patient satisfaction? Should a focus group or another method to involve patients and families in evaluating this proposed practice be conducted?
    - Cultural implications: Will this practice take into consideration multicultural, multiethnic variables?
- Clinical Setting Factors
    - Clinical Expertise: Will clinical experts be required to carry out this practice or to teach others?
    - Safety Issues: Compared with present practice will there be any changes in the level of safety?
    - Feasibility: What are the factors in the clinical setting that will facilitate implementing this practice e.g., equipment, human resources, in-house experts, educational resources. Consider the possible reasons staff would embrace the practice. Is there a process in place for follow-up evaluation of the practice?
    - System-wide initiatives: Are any of the other entities within the organization working on this issue?
    - Interdisciplinary and Departmental Impact: Will this practice increase or decrease nursing time? Will this practice impact on the resources, staffing or the processes of another department? Will the purchasing contracts of pharmacy or central supply have to be considered?
    - Organizational philosophy: Will this practice be compatible with the mission, values and goals of the organization?
    - Receptiveness Factors: Would patients, healthcare providers and the community as a whole be receptive to this practice? Are there major pockets of resistance in

the organization who would dispute the practice? Consider the possible reasons staff may be unwilling to embrace the practice.
    - Key Stakeholders: Have key stakeholders including physicians and other groups involved in this discussion? Are there specialty committees e.g., pain committee or patient safety committee that should be involved?
    - Ethical Aspects: Would this practice affect the ethical principles of beneficence, nonmaleficence, veracity, autonomy, fidelity, justice and confidentiality/privacy?
    - Cost-Benefit Ratio: What are the benefits from a cost standpoint of implementing this practice? What are the short-term and long-term material and human costs of implementing this practice? What are the costs of not implementing this practice considering patient safety, legal risks, employee retention, turnover, and morale?
    - Legal Implications: Will this practice change put the organization or its employees at increased or decreased risk for legal actions?
    - Regulatory and Accrediting Requirements : Will this practice fall within the regulatory requirements of agencies such as AHCA, OSHA. Will this practice meet JCAHO or other accrediting organization requirements?
    - Community/Global Influences and Impact: Will the community as a whole accept the practice or will there need to be choices and decision-making options? Will this practice be impacted on by global issues e.g. availability of healthcare resources, disasters? Will this practice contribute to the health system's commitment to be environmentally responsible and energy-efficient?

Plan the Implementation

Obtain Approvals: Who or what groups will be required to approve this practice change?
Pilot the Practice: Should this practice be piloted before considering hospital- or organization-wide implementation?
Communicate & Educate: What are the best methods to educate staff about this practice change? How will you know staff have adequate knowledge to perform the practice? How will competence be measured?

Implement the Practice

- Determine what type of support and resources should be available during this phase to help ensure success and what departments should be involved.

Evaluate the Practice Change

- During the planning phase, determine which endpoints will be measured and how they will be measured in the evaluation phase e.g., improved health outcomes, cost effectiveness, improved processes, and so forth.
- Ensure regular review of the practice and invite feedback.
- Rephrase question if necessary and repeat the steps outlined on the model as appropriate.

Addendum C: Bath in a Bag

We researched the literature and learned that the typical bed bath simply moves bacteria from 1 part of the body to another and left dried soap on the skin, which elevates the pH thus reducing bacterial and fungal resistance.[22-25] The bath in a bag concept seemed appealing. Cloths in a bag that would be heated in a microwave seemed like the answer to:

- Reducing the bacterial burden;
- Increasing patient satisfaction; and
- Saving money by reducing nursing time and linen usage.

We gathered a group of nursing assistants who tried the different products on each other and then chose their favorite. We were so convinced that this concept would be successful that after "educating" the staff, we implemented the new bed bath procedure hospital-wide without doing a pilot.

We soon discovered that this practice change was very costly. Despite our well-intentioned "education," we did not address patient selection; therefore, practically every patient was being given the packages, even those who did not need bed baths. Also, the product is very popular among boaters and campers; therefore, we were losing the product to staff and visitors. Another aspect that we did not carefully consider was patient satisfaction. Many patients preferred a basin of water instead of the bath in a bag.

We learned that we should have done more investigation before implementing this new procedure. For example, we could have:

- Involved patients in the information gathering phase;
- Conducted a pilot study;
- Arranged for securing the product;
- Educated the patients about the benefits; and
- Provided better staff education about patient selection and appropriate use of the item.

This product is now being reintroduced for intensive care, oncology, and surgical patients who are not able to self-bathe.

Suggested Reading

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