

## FOCUS: NURSING

# An Infrastructure to Advance the Scholarly Work of Staff Nurses

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The traditional role of the acute care staff nurse is changing. The new norm establishes an expectation that staff nurses base their practice on best evidence. When evidence is lacking, nurses are charged with using the research process to generate and disseminate new knowledge. This article describes the critical forces behind the transformation of this role and the organizational mission, culture, and capacity required to support practice that is based on science. The vital role of senior nursing leaders, the nurse researcher, and the nursing research committee within the context of a collaborative governance structure is highlighted. Several well-known, evidence-based practice models are presented. Finally, there is a discussion of the infrastructure created by Yale-New Haven Hospital to advance the scholarly work of the nursing staff.

## INTRODUCTION

The nursing profession is composed of more than 3 million members. Almost two-thirds of these nurses practice in hospitals, the majority of whom are registered nurses (RNs†). RNs enter into the acute care workforce possessing varying levels of

preparation and subsequent competencies, as the majority of diploma (53.7 percent), associate degree in nursing (64.8 percent), and baccalaureate degree in nursing (67.4 percent) graduates practice in hospitals. Fewer than half of nurses with masters or doctorate degrees (47.8 percent) seek employment in hospitals [1].

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†Abbreviations: ANCC, American Nurses Credentialing Center; CGS, collaborative governance structure; CNO, chief nursing officer; EBP, evidence-based practice; IOM, Institute of Medicine; LOI, letter of intent; NRC, Nursing Research Committee; RNs, registered nurses; Y-NHH, Yale-New Haven Hospital.

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When entering a patient care unit in any hospital across the country, one of your first encounters will be with a RN who is a staff nurse, responsible for providing direct professional nursing care to patients and their families. Practicing in the acute care setting, where the emphasis is placed on the provision of timely, safe, and effective care, is complex and demanding. Staff nurses are the focal point for all activities surrounding the care of the patient. Nurses tend not only to the physical and emotional needs of patients and families, but they tend to the environment of care. In this multifaceted role, they act as care planners, coordinators, providers, educators, and communicators. It is not surprising to note that staff nurses practicing in this traditional role are not intimately involved in examining the evidence to inform practice nor are they involved in the conduct of research. Multiple barriers prevent them from engaging in this scholarly work, including time constraints, as their priority is to meet the ongoing needs of patients and families. In addition, most staff nurses are not prepared at the graduate level and have limited knowledge, skill, and experience in the pursuit of best evidence. Therefore, this scholarly work is most often deferred to hospital-based nurses who have advanced practice degrees or graduate students and academicians in university settings where there are ample resources to support these activities.

The purpose of this article is to describe the critical forces that are changing the role of the staff nurse, barriers that need to be overcome, and the infrastructure created by Yale-New Haven Hospital (Y-NHH) to advance the scholarly work of more than 3,000 nurses practicing in this organization. Y-NHH is a non-profit, 1,519-bed tertiary medical center and is the primary teaching hospital for Yale School of Medicine.

## THE IMPETUS FOR CHANGE

In recent years, several forces have converged that provide the impetus for changing the traditional role of staff nurses. A trio of publications from the Institute of Medicine (IOM), namely, *The Future of Nursing:*

*Leading Change, Advancing Health* [1], *To Err is Human: Building a Safer Health System* [2], and *Crossing the Quality Chasm: A New Health System for the 21st Century* [3], have served as a wake-up call to physicians, nurses, and health care leaders to make patient care safer and improve the health care delivery systems. An essential element, critical to achieving this mandate, is the creation of organizational infrastructures designed to support decisions about patient care that are based on evidence. Evidence-based practice (EBP), as opposed to practice that is based on tradition, is designed to provide consistent, high-quality care through the implementation of the best available scientific knowledge, thus limiting practice variations among health care professionals across all geographic locations [3]. In an effort to accelerate the incorporation of new science and technology into nursing practice, the first of these publications endorses the achievement of higher levels of education and training for nurses. Vital competencies for staff nurses today include the use of EBP and the research process to answer clinical questions that are important to their practice [1].

In addition to the IOM reports, another driving force for this culture change in nursing worldwide is the desire of an organization to achieve Magnet® designation. The Magnet Recognition Program®, established by the American Nurses Credentialing Center (ANCC), bestows this designation on health care organizations for their extraordinary patient care, nursing excellence, and innovations in professional nursing practice [4,5]. To date, there are 395 international organizations that have received this prestigious designation. The majority are from the United States, but hospitals in Lebanon, Singapore, and Australia are included. The York Street campus of Y-NHH received this prestigious recognition in May 2011 [6].

## THE MAGNET® ORGANIZATIONS

Magnet® organizations, which include hospitals and long-term care facilities, distinguish themselves from others by their ability to act as “magnets,” attracting and re-

taining highly qualified nurses, resulting in exemplary organizational and patient outcomes. Within these organizations, there are numerous dynamic forces at work that embody what the ANCC refers to as the Magnet® Model. There are four components of the model (transformational leadership, structural empowerment, exemplary professional practice, and new knowledge, innovations, and improvements) that together create the synergy necessary to achieve the fifth component, which is focused on empirical quality outcomes. All of these interrelated components operate by taking into account the global issues in nursing and health care that challenge the profession [7]. The following sections define the components of the Magnet® Model.

#### *Transformational Leadership*

Magnet® organizations have at their helm senior leadership teams, starting with the chief nursing officer (CNO), who are transformational leaders. They enlist a number of strategies to transform the mission, vision, and processes of the organization to meet projected health care demands. Highly regarded by their organization, they possess clinical knowledge, organizational influence, and leadership expertise necessary to guide the organization into the future. They recognize that their vision may initially disrupt the status quo and create a period of controlled destabilization. However, it is during these times of uncertainty that new ideas and practice innovations flourish as the organization journeys into the future. Transformational leaders are recognizable by their organization's achievement of consistent superior outcomes over time [4,5,7].

#### *Structural Empowerment*

Structural empowerment refers to the nursing infrastructure that exists in Magnet® organizations. This infrastructure, aligned with the mission and vision of the organization, is composed of supportive structures, systems of care, policies, and community partnerships in which nursing practice thrives. As a result, nurses are empowered to adopt new evidence into practice

and use the research process to achieve superior outcomes [4,5,7].

#### *Exemplary Professional Practice*

The professional practice of nurses within Magnet® organizations is truly exemplary. Nurses in these settings practice to their fullest potential and have a keen awareness of their sphere of influence on the interdisciplinary team, patients and families, and the communities they serve. They work together to make a difference in workforce and patient safety, the hospital experience of patients and families, and the achievement of exemplary organizational and clinical outcomes. To achieve these goals, nurses are future-oriented, readily translating best evidence and innovations into practice [4,5,7].

#### *New Knowledge, Innovation, and Improvements*

This component of the model refers to the organizational belief that nurses have the professional responsibility to generate new knowledge, implement innovations in practice, and optimize improvements in the safety and quality of patient care. Leaders in Magnet® organizations design the nursing infrastructure to assure that there are adequate human and material resources available for nurses to implement new models of care, assure practice is evidence-based, and engage in the research process. This component of the Magnet® Model has the greatest influence on advancing the scholarly work of the staff nurse [4,5,7].

#### *Empirical Outcomes*

Empirical outcomes are the product of the four highly synergist components of the previously described Magnet® Model. There are a number of structure, process, and patient outcomes, referred to as nursing-sensitive measures, that hospitals must demonstrate consistent superior performance when benchmarked against other Magnet® organizations with similar characteristics (Table 1) [7]. Organizations submit interim reports to ANCC annually to validate their compliance with ANCC polices and outcome expectations [8]. After four years, organiza-

**Table 1. Hospital Empirical Outcome. The outcome measures of quality are nationally benchmarked data and are reported at the unit-level or organizational level [8].**

Outcome Category	Reporting Schedule	Measure
Structure of Nursing Service	Quarterly or annually	Nursing care-giver hours per day Educational and specialty certification of registered nurses Nursing skill mix (registered nurses, licensed practical nurses, unlicensed assistive personnel) Nursing turnover
Nurse Satisfaction	Most recent nurse satisfaction or engagement surveys	Examples of items that are relevant to nursing: — I would recommend this organization to my friends as a great place to work — This organization inspires me to perform my best — My ideas and suggestions are valued by my organization — I have the right amount of independence in my work — I receive effective on the job training — My organization helps me deal with stress and burnout
Patient Satisfaction	Quarterly data for the most recent 2 years at the unit level	Four of the following (as determined by the organization): — Pain assessment — Education — Courtesy and respect from nurses — Careful listening by nurses — Response time
Nurse-sensitive Clinical Outcomes	Quarterly data for the most recent 2 years at the unit level	Two of the following (as determined by the organization): — Blood stream infections — Urinary tract infections — Ventilator associated pneumonia — Restraint use — Pediatric intravenous infiltration — Other specialty-specific nationally benchmarked measures — Patient falls and falls with injury — Nosocomial pressure ulcer incidence or prevalence

tions undergo a redesignation process. There is an expectation that these organizations will outperform the national benchmark statistics the majority of the time.

### **BARRIERS TO EVIDENCE-BASED PRACTICE AND RESEARCH AT THE STAFF NURSE LEVEL**

Despite the external (IOM reports) and internal (Magnet® designation) motivators

for staff nurses to be involved in EBP and research, there is a plethora of reasons, at both the individual and organizational level, that create barriers for staff nurses in the acute care setting. Although staff nurses frequently need information to support daily practice and have access to health science libraries, they rarely use them. They are more likely to ask peers or access the Internet rather than use the library or search electronic databases [9]. For those nurses who know how to ac-

cess the evidence, the volume of literature available for consideration is overwhelming. The demands associated with patient care limit the time nurses have to become involved in EBP activities during scheduled work hours [9-12]. Staff nurses have reported that they lack the knowledge and skill necessary to formulate searchable clinical questions, conduct literature searches, critique and synthesize the literature [9-12], and change practice based on the evidence [10]. Negative attitudes about research make nurses less likely to participate in projects designed to advance nursing practice [9].

Another frequently cited barrier has to do with nurses' self-reported lack of confidence in their ability to engage in EBP [9-12]. This barrier relates directly to nurses' educational preparation. With the aging nursing workforce, many staff nurses are graduates of nursing schools in which the curriculum did not emphasize EBP and research. In a recent study, there was a significant difference between the views of nurses having a baccalaureate or higher degree in nursing compared with their diploma and associate degree peers. The former group had a stronger belief that nursing should be a research-based profession and that EBP is essential for professional nursing practice [12]. These knowledge gaps and attitudinal differences among staff nurses are further exacerbated by practicing in organizations that lack adequately prepared nurses to mentor staff through the EBP or research process [10-11]. Insurmountable barriers to EBP are a result of additional organizational characteristics and cultures [9,11,12]. Impediments for staff nurses include working in organizations that fail to value EBP, allocate protected staff time and resources to support scholarly work [9-11,13], or promote nurses' autonomy to change practice [12].

### **ORGANIZATIONAL MISSION, CULTURE, AND CAPACITY FOR NURSING SCHOLARSHIP**

It is within the purview of the CNO and other senior nursing leaders to define the organization's mission and culture for nursing scholarship [14]. Given the well-articulated

barriers to EBP gleaned from the literature, it is no wonder that it can take years to translate the evidence into practice [3,15]. Therefore, this leadership team plays a pivotal role in narrowing this gap by building the capacity for nursing scholarship.

### **Senior Nursing Leaders Responsibilities**

It is ultimately the responsibility of the CNO, supported by other senior nurse leaders, to overcome individual and organizational barriers to EBP. At the helm of successful hospital-based nursing research and EBP programs are nursing leaders who have made it their mission to make EBP transparent across all nursing roles [14,16-18,20,22-24]. They accomplish this mission by implementing a comprehensive infrastructure that builds and sustains the capacity for innovative, evidence-based nursing practices. As a result, these organizations achieve exemplary outcomes for both nurses and patients [16-23].

In settings where nursing scholarship is truly embraced, nursing leaders foster a culture shift in the day-to-day practice of the nurse. Nursing care that is steeped in tradition is no longer acceptable. The new norm establishes an expectation that nurses question their practice, seek answers from the best evidence, and apply it to their practice. When evidence is lacking, nurses are charged with using the research process to generate and disseminate new knowledge that may ultimately lead to innovations in practice [16,18,25,26].

For many CNOs, establishing the new norm is challenging, but equally challenging is sustaining the momentum needed to maintain this norm. CNO leaders from 15 re-designated Magnet® hospitals recently revealed their tenacity for sustaining excellence in nursing practice [17]. During interviews with these leaders, common themes emerged, all relating to their leadership philosophy about the organization and its employees. They consistently described their "relentless quest and focus on quality care," shared leadership style that actively engages staff from all disciplines, and their efforts to build continuously leadership and clinical practice knowledge of staff.

### *Building the Capacity for Scholarly Work*

Building the capacity for scholarly work of the nursing staff requires a major redesign of the nursing infrastructure. Tradition-based hierarchical models in which staff nurses are the least empowered of all nurses to make practice decisions are abandoned for a collaborative governance structure (CGS). The CGS is based on the belief that staff nurses own their practice and are responsible for advancing and sustaining it [27]. This paradigm shift gives staff nurses the authority and accountability for making practice decisions that are guided by the results of research and other sources of evidence [16,28,29].

The creation of a CGS involves implementing new structures and processes, as well as the addition of material and human resources needed to support the scholarly work of the nurse [16,18,22]. New committees and advisory councils, including a nursing research committee (NRC), are established [16,20,21,23,24,30]. Communication processes are defined to facilitate interactions among nursing departments and the various CGS committees and advisory councils [16]. Many organizations involved in this work recommend that an EBP model be selected to guide the EBP and research processes [16,22,23,31-34]. Building the capacity for advancing the scholarly work of staff nurses takes time. It may be at least 3 to 5 years before organizations garner the benefits of this work, as evidenced by increasing numbers of nurses from all levels of the organization fully engaged in finding answers to pressing clinical questions through their involvement in EBP and research projects [24].

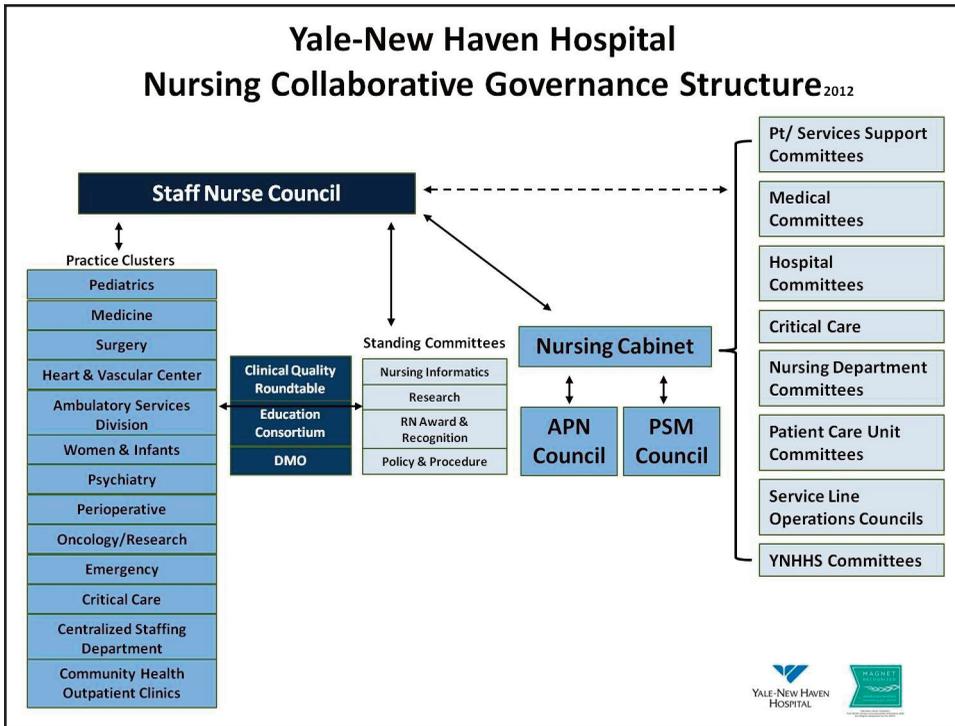
A key addition to the nursing service is a nurse researcher who possesses a doctorate of nursing science (DNS/DNSc) or PhD. These research-focused degrees [36] prepare nurse scholars with advanced research skills necessary to lead EBP and research activities, educate and mentor others in the conduct of EBP and research projects, and obtain external funding to support these projects [20,22,35-36]. Doctorally prepared nurse researchers are most commonly found in Magnet® hos-

pitals or those seeking Magnet® designation compared with non-Magnet organizations [36]. Several responsibilities of this role are necessary to build and sustain the organization's capacity for EBP and research:

- Establish academic partnerships [21,37]
- Coordinate the work of the NRC [38,39]
- Implement research and EBP policies and procedures [38,39]
- Select, train, and advise research mentors to guide staff nurse projects [18,20,22,35]
- Serve on the institutional review board [35]
- Implement educational opportunities to assure that staff nurses and mentors develop necessary knowledge and skills to conduct EBP and research projects [18,20,22]
- Maintain a central repository of research and EBP projects [20]
- Secure internal and external funding for project work [20,36]
- Negotiate with senior leadership for protected nursing staff time away from direct care responsibilities to participate in committee and project work [20,35]
- Secure needed material and human resources (statistical, administrative) [20,35]
- Mentor nursing staff in the internal and external dissemination of project results (writing abstracts and manuscripts for publication, creating posters and oral presentations for local and national professional conferences)
- “Lead by example” through personal scholarly work [20,35]

### **TRANSFORMING Y-NHH STAFF NURSES' ROLE: THE COLLABORATIVE GOVERNANCE STRUCTURE**

Powered by the IOM reports and Y-NHH's desire to achieve Magnet® designation, our senior leadership recognized the need for a dramatic transformation of the work of the nurse. Nursing administrators and managers partnered with nursing staff to imple-



**Figure 1.** Yale-New Haven Hospital Nursing Collaborative Governance Structure 2012. DOM, Data Management Office; RN, registered nurse; APN, advanced practice nurse council; PSM, patient service manager council; Pt, patient; YNHHS, Yale-New Haven Health System.

ment a CGS. This new structure formalized the process used by nurses from all levels of the organization to drive EBP and research.

Implementation of the CGS involved the creation of several new groups and the hiring of a full-time nurse researcher. The Nursing Cabinet was formed, and its members include the executive and senior nursing leaders (CNO, associate CNO, nursing directors, nurse researcher, and chairs of standing advisory committees). The Staff Nurse Council, composed of 14 staff nurses, was also established. This group is responsible for representing the ideas, clinical issues, and problem-solving recommendations of all nurses. The chair and vice-chair of the Staff Nurse Council are the voice of the staff nurse, as they, too, are members of the Nursing Cabinet. In addition, members of this council represent staff nurses on all Y-NHH interdisciplinary hospital committees. Staff Nurse Council members serve for 2 years. Successors are chosen by the council from a cadre of staff nurses who have completed a

written application and an interview that focuses on their leadership abilities.

Several other groups were added to the CGS to support the scholarly work of staff nurses. For example, 13 population-specific practice committees, referred to as Practice Clusters, were established. Each Practice Cluster is composed of staff nurse clinical experts who represent their respective inpatient or ambulatory care service lines. The Staff Nurse Council coordinates the systematic integration of EBP throughout nursing by its work with the Practice Clusters. Lastly, seven standing advisory committees were created to support the work of the Staff Nurse Council and the Practice Clusters, including the Nursing Research and EBP Committee (Figure 1).

All nurses have direct access to the CGS through the submission of electronic requests to implement EBP improvements. Each request undergoes a scientific review process, which is initiated by sending the request via email to the Staff Nurse Council

**Table 2. Synthesis of Phases or Steps of Evidence-based Practice Models into Five Major Themes used to Guide Practice Changes.**

EBP Model <i>Number of Phases</i>	Define Clinical Question	Model Phases or Steps			
		Select Evidence	Judge Evidence	Translate Evidence into Practice	Evaluate Outcomes
Stetler Model [40] <i>5 Phases</i>	I Preparation	II Validation	III Decision Making	IV Translation /application	V Evaluation
Iowa Model [26] <i>10 Steps</i>	I Triggers  II Priority for organization?  III Form a team	IV Assemble relevant literature	V Critique and Synthesis of Research  VI Evidence Sufficient?  VII Evidence In- sufficient?	VIII Pilot change  IX Institute change	X Monitor and analyze out- come data
Johns Hopkins Model [41] <i>3 Phases</i>	I Practice question	II Evidence	II Evidence	III Translation	III Translation
Rosswurm and Larrabee's Model [42] <i>6 Steps</i>	I Assess need for change in practice  II Link prob- lem inter- ventions and out- comes	III Synthesize best evidence	III Synthesize best evidence	IV Design practice change  V Implement and evaluate practice change	VI Integrate and maintain practice change
ACE Star Model of Knowledge Transforma- tion [45] <i>5 Phases</i>	I Research discovery	II Evidence summary	II Evidence summary	III Translation to guidelines IV Practice integration	V Process Outcome Evaluation

ACE, Academic Center for Evidence-Based Practice

and chairs of the cluster and standing advisory committees. Each advisory committee determines if its expertise is needed to support the request for practice improvements.

### ADOPTION OF AN EBP MODEL

In the early stages of developing the CGS at Y-NHH, a task force, composed of

clinical nurse specialists, nurse educators, and staff nurses, was charged with adopting an EBP model to guide practice decisions. Several models were selected for review because they were widely accepted models used in organizations across the country. Each of these models uses theoretical approaches for research utilization, practice changes, and dissemination. They all initiate the EBP process based on problem identification resulting from critical thinking exercises and reflection on current practices through the use of data. Although each of these models defines different EBP phases or steps, the processes used within these phases are so similar that they can be synthesized into five major themes that describe how to 1) define the clinical question, 2) select the evidence, 3) judge the evidence, 4) translate the evidence into practice, and 5) evaluate outcomes associated with the practice change (see Table 2).

#### *The Stetler Model of Research Utilization to Facilitate Evidence-Based Practice*

One of the oldest models, the Stetler Model, was first developed in 1976 and underwent a series of revisions in 1994 and 2001 [40]. This prescriptive approach, involving five critical-thinking phases, was devised for use in Baystate Medical Center in Massachusetts to facilitate the application of research into practice. It was designed to be used for clinical, educational, managerial, or other practice situations. This model stands out from the other models because it was created to formalize a process for EBP practice changes by individuals as well as teams of clinicians.

- There is a preparation phase that delineates the need for clarity in the project purpose. This phase compels the user to examine the internal factors (personal bias that may compromise objectivity) and external or environmental factors (organizational mission, timelines, political climate) that may create barriers and ultimately affect the project success. Decisions are also made regarding the sources of evidence to be reviewed.

- The Validation Phase involves critiquing and summarizing evidence from both external (research findings and consensus of national experts) and reliable internal (quality improvement or operational information, national or local experts) sources of information. The Decision Making Phase synthesizes and weighs the strength of the evidence and determines if the evidence should be used for practice changes. How well the findings fit within the practice setting, the feasibility, and current practice are all evaluated before making decisions to use, not use, or consider use of the evidence. Reference to conducting one's own research is highlighted if the decision is made to refrain from using the current evidence to change practice.

- The accepted evidence is applied to practice during the Translation/Application Phase. Stetler refers to this phase as the "how-to's" of implementing a planned change.

- The last phase deals with evaluation of the outcomes. There are formal and informal processes delineated at the individual or organizational level, which are dependent on the complexity of the practice change. For more complex practice changes or those with a "consider use" of evidence designation, a pilot project may be needed to evaluate further the feasibility for widespread adoption.

#### *The Iowa Model of EBP to Promote Quality of Care*

The Iowa model was first developed in 1994 and revised in 2002 [26]. It was originally used at the University of Iowa Hospitals and Clinics to guide nurses and other disciplines in the use of research results to improve patient care. There are 10 steps to the model starting with two triggers, problem focused and knowledge triggers that initiate the EBP process. The former trigger specifies the use of data from numerous sources (process improvement, risk management, local and national benchmark, financial) as well as clinical problems identified by staff. The latter trigger is created when new knowledge becomes avail-

able from a variety of reliable sources (results of research or other literature, published guidelines and standards from national agencies or organizations). It then uses several decision points and a logical sequence of steps to guide the process:

- Initially, clinicians determine if the change is an organizational priority. It is unlikely that administrative support and resources will be provided if the project is not a high priority.

- A team is formed with membership based on the topic under study. The team is responsible for all aspects of the project, which begins with finding, critiquing, and synthesizing of the evidence.

- The next critical decision point asks if evidence is sufficient to justify changes in practice. If yes, it prescribes steps to use for pilot testing the practice change before recommending adoption across other practice settings. If no, there is a research track emphasizing that gaps in literature can generate good research questions, thus motivating staff to initiate a research project.

- The pilot testing of change is required to determine if there are similar positive outcomes as described in the literature and if the project is feasible for widespread dissemination. If yes, the new practice is adopted and ongoing monitoring of outcomes continues. Internal and external dissemination of results through presentations and publications concludes the EBP cycle.

### *The Johns Hopkins Nursing Evidence-Based Practice Model*

The Johns Hopkins Nursing Evidence-Based Practice Model was created by the Johns Hopkins University School of Nursing and the Johns Hopkins Hospital [41]. The model depicts nursing practice, education, and research as the three elements that underpin the nursing profession. Similar to other models, it considers external and internal forces that may influence the outcomes associated with the EBP initiative. It has three phases — Practice Question, Evidence, and Translation — that together have a total of 18 carefully prescribed steps. This model clearly states that these processes are

to be used to guide not only nursing practice decisions, but also nursing education and research decisions.

- The Practice Question phase adopted the PICO framework (P = patient, population, or problem; I = intervention; C = comparison with other treatments; O = outcomes) to focus the question and direct the literature search. It gives a detailed account of roles and responsibilities of the interdisciplinary team members involved in the project.

- As with the other models, the Evidence Phase involves selecting the type of evidence, critiquing, and judging the evidence strength before making recommendations that involve changes in practice.

- Lastly, the Translation Phase examines the feasibility of adopting the evidence into practice using similar methods described in the previous models, including piloting the project. Attention is paid to details about ways to vet recommendations for change with senior leadership and garner support for resources. This information is so valuable for novice change agents to assure they are successful in disseminating the project across systems and have resources to measure project outcomes. It is made clear in this phase that nurses have the professional accountability to communicate their findings outside of the organization through national presentations and publications in scholarly journals.

### *Rosswurm and Larrabee's Model*

With a focus on interdisciplinary teamwork, the Rosswurm and Larrabee six-step process was developed out of the West Virginia University School of Nursing in collaboration with local hospitals [42]. It is quite similar to the other models, including the recommendation to pilot the practice change on two units before widespread dissemination. During this phase, nurses monitor both process outcomes (clinicians' adherence to the new protocol) and clinical outcomes. There are a few features of this model that distinguishes it from the previous three models.

- When assessing the need for change, clinicians are reminded that internal clinical

data is not the only source of information that motivates changes in practice. It prompts clinicians to examine patients' preferences and their satisfaction with care to identify potential problem areas in need of change.

- It advocates the use of standardized language to identify the problem that is then linked to the outcomes and interventions as delineated by the Nursing Interventions Classification [43] and Nursing Outcomes Classification [44] systems.

- The model advocates the use of principles of diffusion theory to integrate and maintain practice changes.

- There is no reference to dissemination of results outside of the local setting.

#### *Academic Center for Evidence-Based Practice (ACE) Star Model of Knowledge Transformation*

Developed by Stevens at the Academic Center for Evidence-Based Practice located at the University of Texas Health Science Center at San Antonio, the Star Model of Knowledge Transformation uses the five points of the star to represent various forms of knowledge [45]. Evidence-based practice is operationalized through the orderly progression of knowledge across five conceptual domains (discovery, evidence summary, translation, integration, and evaluation). There are several characteristics of this framework that differentiate it from the others.

- There are a number of assumptions of the model, among which is the belief that the most generalizable knowledge stems from scientific processes that control bias, namely the research process. Therefore, unlike the other models, it focuses on the use of evidence derived from qualitative and quantitative research studies that run the full gamut of designs (descriptive to randomized controlled trials).

- Unlike the other models, it provides more conceptual discussions about each of the stages opposed to prescribing tangible steps to use within each stage.

- In the evidence summary stage, there is discussion about the "science of research synthesis" and the common terms used when referring to these summaries (evidence syn-

thesis, meta analysis, integrative review, review of the literature, state of the science).

#### *Results of the Selection Process*

After careful consideration, the Iowa Model to Promote Quality of Care [26] was selected for adoption at Y-NHH. Overall, we felt this model was a good fit with our EBP mission and would provide the framework for the work of the CGS. Having a standardized approach to EBP processes would facilitate communication across the organization through existing CGS channels and allow us to capitalize on the strengths of the members from the practice councils and other supportive standing advisory committees that compose the GCS.

Our rationale for this choice was similar to that of nurses from other organizations who have adopted this model [26]. Staff nurses found the graphic representation of the model and its logical, sequential steps to be understandable and very easy to use. The concepts underlying the triggers for engaging in the EBP process act as constant reminders of opportunities for nurses to examine their practice. There is an emphasis on teamwork and the contributions that clinical experts from other disciplines can have on all phases of the EBP process. When the evidence is insufficient to answer clinical questions and guide practice changes, the model provides an option for nurses to use the research process. Unanswered clinical questions can be translated into good research questions, providing motivation for nurses to continue to explore a scientific basis for their practice. This recommendation was a required element in our model selection because of our desire to begin a staff nurse-driven research program.

#### **NURSING RESEARCH AND EVIDENCE-BASED PRACTICE COMMITTEE**

In keeping with the Magnet® Model, this committee was established as an integral component of the CGS to foster a spirit of scientific inquiry, evaluate innovations in nursing practice, and generate new knowledge through the conduct of research. A doc-

torally prepared nurse researcher provides the leadership for the committee whose diverse membership includes other doctorally prepared nurses, advanced practice nurses, staff nurses, a seasoned nurse researcher from the Yale School of Nursing faculty, and health science librarians. This committee partners with the Staff Nurse Council, Practice Clusters, and other standing advisory committees to assure that nursing practice is based on current evidence (Figure 1). Several vital functions of the committee, distributed across five groups, were instituted to overcome barriers and sustain the scholarly work of staff nurses.

#### *EBP Subcommittee*

This subcommittee is composed of teams of masters or doctorally prepared nurses who are paired with staff nurse members. These teams support staff nurses who use the CGS to request practice changes. Their role is to guide nurses through selection, critique, and synthesis of evidence needed for decision making regarding practice changes. Four teams, called Iowa Teams, are needed to manage the volume of requests coming from staff every month.

#### *Education Subcommittee*

Several educational offerings aimed to meet the EBP and research developmental needs of the nursing staff are coordinated by this subcommittee. All nurses are required to attend a 3.5-hour mandatory EBP program that includes an overview of the Iowa Model and a hands-on tutorial on searching for evidence given by a health science librarian. To advance staff competencies in use of the Iowa Model, an 8-hour seminar is offered that provides more detailed instructions about critiquing and synthesizing the literature, measuring outcomes through use of basic statistics, and tips for writing abstracts and creating posters for presentation. An ongoing workshop called "Writing for Nursing Publication" was recently launched in an effort to engage staff in scholarly writing. Finally, this committee plans an annual nursing research program, complete with nationally recognized nursing leaders in EBP

and research as keynote speakers. This forum provides opportunities for staff nurses to showcase their scholarly work and gain experience in public speaking prior to presenting at national professional conferences.

#### *Nursing Research Mentors*

Currently, this select group of 10 nurses with graduate education degrees serves as mentors. They are prepared by attending a 4-hour Research Mentorship Program developed by the Education Subcommittee. The nurse researcher guides the research mentors through all study phases from the generation of research questions to the dissemination of results and local adoption of new evidence.

#### *The Scientific Review Sub-Committee*

The function of this group is to centralize and coordinate all of the nursing service's research activities. The initial goal was to implement a policy and procedure to guide the conduct of nursing research. This document delineates three distinct methods that nurses use to generate ideas for research projects:

1. Iowa Model of Evidence-Based Practice to Promote Quality Care. Nurses submit requests for practice changes to the Nursing Research and EBP Committee via the CGS. Staff nurses are then paired with a doctorally or masters prepared nurse and a librarian from the committee who coach them through the steps of the Iowa Model. During the step that judges the evidence, good research questions are generated when there is insufficient evidence to guide practice improvements.

2. Special Interest Group. This method considers the unique research opportunities for collaboration that arise for nurses practicing in this medical center that affiliates with the Yale School of Medicine and the Yale School of Nursing, as well as other research-oriented schools of nursing. In this approach, groups of nurses (and other disciplines) generate research questions based on their common critical interests. Research projects may stem from nurses who are members of hospital charter teams (e.g., fall

prevention, skin care, diabetes) or specialty practice groups (e.g., cancer, critical care, cardiovascular nursing).

3. Unit-based Nursing Research Model. This model, devised by Marianne Chulay, PhD, RN, is an ideal approach for novice researchers. There are no preconceived notions about what to study in this model. The research mentor engages nurses by using focus-group techniques to generate clinical questions and consensus-building processes to ultimately decide on the research question [46]. At least four to seven nursing staff members volunteer to join their patient care areas research team. A six-step approach with a well-defined timeline provides structure for the team.

Before a project gets under way, nurses submit a letter of intent (LOI) to conduct research to this subcommittee for approval. The subcommittee reviews the LOI to assure that it is an organizational priority, it is clinically feasible, and there are adequate human and material resources to support the research team. Once approved, the nursing team is matched with a research mentor to guide them through all phases of research process, including dissemination of results locally and nationally through presentations and publications. This subcommittee is also accountable for reviewing and approving the Human Investigation Committee applications prior to submission to Y-NHH Office of Legal Affairs and the Yale University Human Subjects Protection Program. There are currently 18 staff-nurse driven research projects under way using all three of these approaches.

#### *Evidence-Based Practice Champion Program*

Staff nurse representatives from more than 30 practice settings serve as unit-based EBP resources nurses. Coached by Nursing Research and Evidence-Based Committee members, these nurses are responsible for orienting new staff nurses to the numerous EBP resources that are available in the clinical setting. They are also charged with enhancing their peers' knowledge of nationally known nursing leaders in EBP and research.

This goal is accomplished by creating and distributing "Who's Who in Nursing" posters to every clinical area. These posters, featuring nursing leaders, display their picture, academic and clinical affiliations, and a list of five recent publications. One article is selected for review by all nursing staff. This process is followed by inviting the featured leader to conduct "Visiting Professor Rounds." The EBP Champions escort the guest leader to select patient care areas for consultation. Having the opportunity to interact with a well-known nursing leader is an invaluable experience that further advances ideas for practice innovations.

#### **NURSING PRACTICE EXCELLENCE**

Given support from mentors and needed resources, it is possible for staff nurses to achieve nursing practice excellence. The result is innovations in practice and exemplary outcomes. Advancing nursing practice through the use of evidence is exemplified by the results of a recent study described below.

A team of staff nurses from Y-NHH's 18-bed cardiac intensive care unit recognized that continuous ST-segment monitoring, an important intervention to detect myocardial ischemia, was underused in their practice setting. Mentored by a Yale School of Nursing faculty member, they conducted a study (funded by Philips Healthcare, Andover, MA) using a pre-post design to determine if nurses' use of and attitude toward ischemia monitoring and the quality of patient care improved with the use of ST-map ischemia monitoring software [47]. Four months after providing an educational intervention about ST-segment monitoring and the installation of new ST-map software, they found improvements in all three outcomes.

The practice changes associated with this study had dramatic lifesaving effects on two young women, ages 38 and 43, who were admitted to this unit [48]. Both patients were undergoing continuous ST-segment monitoring post coronary artery interventions, including stent deployment for acute coronary

syndrome. One woman was in a chemically induced coma and unable to communicate her symptoms. The other women, with multiple comorbid conditions, experienced atypical chest symptoms from an unclear etiology. Vigilant monitoring using ST-mapping by both patients' nurses allowed them to note changes indicative of acute myocardial ischemia. Urgent transport to the cardiac catheterization laboratory was arranged, and both patients underwent treatment for in-stent thrombosis. ST-segment monitoring expedited timely emergency care and thwarted potential life-threatening complications associated with acute myocardial infarction.

## CONCLUSIONS AND OUTLOOK

There is an urgent need for nurses to deliver care that is based on evidence. This includes staff nurses, who in many organizations are the least empowered of all nurses to actively engage in evidence-based practice decisions. Yet these nurses who provide direct care to patients and their families are in the best position to ask challenging clinical questions. This traditional role of the staff nurse is being transformed by nursing leaders whose mission is to advance the scholarly work of nurses. Hospitals with successful EBP and research programs have shared their success stories and have demonstrated that an infrastructure using multifaceted strategies is necessary to overcome individual and organizational barriers and sustain their programs.

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