

Title: **Building Research Infrastructure in Magnet® Hospitals: Current Status and Future Directions**

**Authors:** Meg Johantgen, PhD, RN, Marianne Weiss, DNSc, RN, Vicki Lundmark, PhD, Robin Newhouse, PhD, RN, NEA-BC, FAAN, Karen Haller, PhD, RN, FAAN, Lynn Unruh, PhD, RN, LHRM, Maria Shirey, PhD, MBA, RN, NEA-BC, FACHE, FAAN

**Author Affiliations:** Associate Professor (Dr. Johantgen), University of Maryland School of Nursing; Professor (Dr. Weiss), Marquette University College of Nursing; Director (Dr. Lundmark), Institute for Credentialing Research, American Nurses Credentialing Center; Dean and Professor (Dr. Newhouse), Indiana University School of Nursing; Vice President of Nursing and Clinical Affairs (Dr. Haller), Johns Hopkins Medicine International; Professor (Dr. Unruh), University of Central Florida, College of Health and Public Affairs; Professor (Dr. Shirey), University of Alabama School of Nursing.

**Corresponding Author:** Dr. Johantgen, University of Maryland School of Nursing, 655 West Lombard Street suite 518, Baltimore, MD 21201 ([johantgen@son.umaryland.edu](mailto:johantgen@son.umaryland.edu))

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**Abstract**

**Objective:** To describe the infrastructures supporting research in Magnet® hospitals.

**Background:** Hospitals undertaking the journey toward Magnet designation must build research and evidence-based practice (EBP) infrastructures that support the infusion of research and EBP into clinical practice.

**Methods:** An electronic survey was developed and distributed to the chief nursing officer or Magnet coordinator of all Magnet hospitals between June 10, 2015 and July 8, 2015.

**Results:** Of the 418 Magnet hospitals invited, 249 responses were received (60%). Resources dedicated to nursing research were difficult to isolate from those for EBP. Supporting clinical nurses' time away from the bedside remains a challenge. Nearly half (44%) indicated that research is conducted within the nurses' usual clinical hours and 40% indicated that nurses participate on their own time.

**Conclusions:** Hospitals utilize a variety of resources and mentor arrangements to support research and evidence-based practice, often the same resources. More targeted resources are needed to fully integrate research into clinical practice.

**Background**

New knowledge generation through the conduct of research is a requirement for Magnet® recognition and re-designation. Hospitals undertaking the journey toward Magnet designation must build research and evidence-based practice (EBP) infrastructures to infuse research and EBP into clinical practice. While EBP structures and processes have evolved, less is known about support and activities specifically related to research. Mature nursing research models have evolved in academic medical centers (1-2) while smaller community hospitals face unique challenges for both EBP and research (3-4). Much of the literature describes how different hospitals have approached building EBP and research capacity (5-10).

A survey conducted in 2009 and 2010, the Hospital-based Nursing Research Requirements and Outcomes (HNRRO) survey (11), examined research policies and procedures and linked these to scholarly outcomes. Hospitals reported various structures to support nurse-led research, including mentors, research training, peer review, and help with dissemination. In comparing Magnet and non-Magnet hospitals, a higher proportion of Magnet hospitals had research mentors, research internship/fellowships, and required that research have prior approval by a committee and/or individuals. A 2nd publication from the same study summarized responses to open-ended questions about facilitators and barriers to research into 24 areas (12). Presence of a research mentor was the highest ranked facilitator in both Magnet and non-Magnet hospitals. Institutional leadership support for research was the 2nd highest ranked. The primary hindrances to conducting research were lack of time in Magnet hospitals and lack of mentors in non-Magnet hospitals. These are consistent with the barriers to EBP implementation in hospitals identified in a nurse survey (13).

The American Nurses Credentialing Center (ANCC) Research Council is charged with advising the ANCC® on strategies for promoting research in Magnet organizations. One strategy has been to commission multisite studies conducted at Magnet hospitals. The goals of these studies are to engage hospitals and their clinical nurses in large-scale research with direct application to clinical practice and to increase the research capacity at participating hospitals. To date, 2 multi-site studies have been commissioned by ANCC and funded through hospital participation fees (14). Magnet hospitals

participating in these multisite studies ranged from small community hospitals of < 200 beds to major academic medical centers of > 1000 beds. The multisite principal investigators reported that there was substantial variation in personnel, research structure, and research experience across the participating hospitals. While the multisite studies are designed to increase research capacity, a better understanding of the nursing research resources that might be available was needed.

Informal discussions with hospitals confirmed that some hospitals have a clear differentiation of structures between research and EBP, while other hospitals may consider research, EBP, and quality improvement (QI) under the umbrella term “nursing research.” Moreover, some of the hospitals relied on consultants to support nursing research. Recognizing a need for more information about how hospitals operationalize their nursing research enterprise, the ANCC Research Council developed a survey to describe infrastructures to support research in Magnet hospitals. This paper describes the survey, results, and implications for hospital nursing research programs.

### ***Methods***

The ANCC Research Council identified aspects of hospital research infrastructures that are important to developing a successful research program. Six domains were considered crucial: research council; research departments; research financial support; research internship/fellowship programs; research mentoring; and research success metrics. These domains were the framework for developing a survey to describe Magnet hospital research infrastructures, named the Magnet-Recognized Organizations Research Infrastructure Survey. While this survey differed from the HNRRO survey in collecting information on research infrastructure, to be able to make comparisons with the HNRRO, some of the same terminology was used and in some cases, entire questions (with permission). The final survey was 58 questions with varying responses types (e.g., Likert, Yes/No, etc.). Select “all that apply” was used in the HNRRO for many items and this same approach was used.

The survey was constructed in SurveyMonkey™ and the survey link was mailed with an invitation to the chief nursing officer (CNO) or the Magnet program directors in the 418 Magnet-recognized organizations

at the time the survey was launched. The instructions indicated that the purpose was to identify best practices in research infrastructure and asked that only 1 respondent from each Magnet-recognized organization reply to the survey. The survey was open between June 10, 2015 and July 8, 2015. The study was determined to be not human subjects' research by the University of Maryland institutional review board.

An electronic database was created from the web-based survey data. Hospital characteristics (bed size, region, teaching, hospital type) were obtained from ANCC and were added to the file and then all hospital identifiers were removed in the analytic file. Analyses, primarily descriptive, were conducted with SAS/STAT Version 9 (Cary, NC) and IBM SPSS Version 21 (Armonk, NY).

## ***Results***

### **Hospital Characteristics**

Of the 418 Magnet hospitals sent the invitation, 249 responses (59.6%) were received. Hospitals were evenly distributed among those with < 300 beds, 301-600, and 601 or > beds. Nearly half were from the Western US, and two were international. More than half (58%) were teaching hospitals, and 87% were acute care general hospitals. In comparing the responding hospitals to all Magnet hospitals, there were no statistically significant differences in bed size, teaching and type of hospital.

The job title of the survey respondents varied considerably. The most frequent title of respondents included director/manager nursing research (15%), CNO (11%), and director of professional practice (10%). In a separate question, 43.8% of respondents indicated they were the Magnet program director.

### **Six Research Infrastructure Domains**

#### ***Nursing Research Council***

The structure of the committees or councils that support nursing research was one of the primary interests in the survey. To account for the possibility that a hospital may have more than 1 committee, respondents were able to "check all that apply." Forty percent of the hospitals responded to only 1 of the

choices while nearly half responded to at least 2. Overall, 74% of hospitals reported they had a nursing research council and 49% indicated a nursing EBP council. Thirty-three percent reported their structure included an interdisciplinary research committee or council and 18% reported an Interdisciplinary EBP committee/council. In the hospitals reporting more than 1 committee, the most common combinations were nursing research council/committee and nursing EBP Council (43%), and nursing research council/committee and interdisciplinary research council committee (16%).

The characteristics of the nursing research committee/council varied (Table 1). Nearly 40% had > 15 members and nearly three quarters (73%) were open to all interested. Twenty-three percent reported term limits with the most common being 2 years. The chair was either appointed or elected (43 and 42%, respectively). Nearly all hospitals (95%) reported participation of clinical nurses. While 69% of responding hospitals indicated that there were minimum educational qualifications for chair, of those who indicated minimum qualifications, the most frequent degree was a Masters in Science (MS) (27%). A staff nurse most commonly served as chair (45%), followed by the director of nursing research (18%). The functions of the groups varied with mentoring and communication being the top 2 functions (Figure 1).

### *Nursing Research Departments*

A third (n=83) of the respondents indicated that they had a nursing research department defined as having a physical space for 1 or > nurse researchers. The functions are summarized in Figure 2. Ninety-six percent of hospitals with a nursing research department reported that it supports proposal development (96%), assists with writing for publication (92%), and conducts education (92%) were key functions.

### *Nursing Research Financial Support*

Of the 249 Magnet-recognized hospitals that replied to the survey, nearly 58% reported that the hospital specifies an annual budget for nursing research. The 2 most commonly cited budget items were support for posters and presentations (85%) and for conference travel (65%). But personnel likely represent a large budget item either in the nursing research budget or other cost center since nearly half (44%)

support a research coordinator and 42% support a statistician. Nearly one-third (31%) reported having an administrative assistant.

Of particular interest was the financial support for clinical nurses to participate in nursing research. Multiple responses were allowed in the questions assessing how hospitals support time for clinical nurses rather than forcing a single choice. Hospitals reported using a combination of ways to financially support clinical nurses participation. Nearly half (49%) indicated that time was allocated within the unit budget and 44% (n=107) indicated that research is conducted within the nurses's usual clinical hours. Forty percent (n=98) of respondents indicated that nurses participate on their own time. One quarter (n=61) indicated that time was allocated in nursing service administration budgets.

#### *Nursing Research Internship/Fellowship Programs*

More than a third (n=94) of the hospitals reported having a formal research internship or fellowship program providing practical experience for a novice clinician researcher. Fifty-five (59%) of those hospitals had a minimum education requirement for participation, most commonly (84%) a Bachelor's degree. All but 1 hospital offered paid release time for participation and a third of the hospitals offered continuing education credit. Requirements of the programs included disseminating findings (35%) and conducting literature reviews (31%), as well as an assumption of completion of the research project or EBP project.

#### *Nursing Research Mentoring*

Nearly all (96%) of responding hospitals indicated that they had research mentors available to guide nursing research. The same research mentors also guided nurses through EBP projects in 80% of the hospitals. The minimum education required to be a research mentor was PhD in 28% (n=67) of the hospitals, doctorate in nursing practice (DNP) in 9% (n=22), MS in 45% (n=108), Bachelors in 9% (n=22) and no required minimum in 9% (n=22).

Research mentors were reported to be from a variety of sources. Most often they were employed by the hospital to do research (45%; n=108) or to provide mentorship (39%; n=94). More than a third of the hospitals reported engaging faculty from an affiliated nursing school (37%; n=89) or from non-affiliated nursing schools (8%; n=8). Consultants were used in 10% (n=24) of the hospitals.

#### *Outcome Metric of Research Success*

Respondents were asked to rank 5 metrics of success for nursing research in the organization from a high of 1 to a low of 5. The dark polka dots section of the bars in Figure 3 represents the % of hospitals that ranked each potential measure as # 1. Practice change was considered the most important measure of success of nursing research in the organization, with more than 55% (n=137) of the respondents giving it the highest ranking. The next highest-ranking measure, represented by the cross hatching, was addressing an organizational priority, which came in at a distant second (about 24% ranking it # 1, but 34% ranking it # 2).

#### **Differences Between Teaching and Non-teaching Hospitals**

We found differences between teaching and non-teaching hospitals in research council infrastructure, mentoring infrastructure, and budgets for research. As compared to non-teaching hospitals, teaching hospitals had a higher proportion with a nursing research council (79% vs 67%) and an interdisciplinary research council (38% vs 28%). In teaching hospitals, the chair of the nursing research council was more commonly appointed, with a minimum requirement of PhD, whereas in non-teaching hospitals, the chair was more likely to be elected with a minimum educational requirement of MS in nursing.

In teaching hospitals, mentors were more often employed by the hospital (54% vs 34%) or were faculty from an affiliated university (44% vs 30%). Non-teaching hospitals also made arrangements with non-affiliated faculty and consultants for research mentoring. Teaching hospitals had a higher proportion reporting partnerships with schools of nursing than non-teaching hospitals (59% vs 39%).



Sixty-three percent of teaching hospitals and 52% of non-teaching hospitals reported having an annual budget for nursing research. Both types of hospitals reported budgeting for conference travel and poster development. Teaching hospitals more frequently reported budgeted positions for a research coordinator, administrative assistant, and statistician. Time for clinical nurse research activities were funded through unit budgets more frequently in teaching hospitals (51% vs 36%) but nurses also performed research activities on their own time more commonly in teaching hospitals (46% vs 34%). In non-teaching hospitals, research was more commonly aligned with organizational goals as criteria for approval (70% vs 56%).

### ***Discussion***

Magnet hospitals have developed a variety of structures and processes to support nursing research. Not surprisingly, there was considerable variation in committee titles, functions, and overall resources. While we found that nearly 74% (n=183) of hospitals had a nursing research council, only 43% (n=106) of the hospitals had both research and EBP councils, suggesting that many hospitals have a single structure to support both EBP and research. A single structure and a single director of nursing research and EBP may add to the well-documented confusion among EBP and research (15-17).

The findings also suggest hospitals utilize a variety of mentor arrangements to support research and they may not have the resources needed to fully integrate research into clinical practice. Research mentors are most often being employed by the hospital although the amount of effort allocated to nursing research by the mentors was not identified. Nearly half had a formal partnership with a school of nursing and a third responded that they have a dedicated PhD prepared faculty member to support nursing research.

Support for clinical nurses to carry out research activities varied. Considering that hospitals reported that clinical nurses' research activities have to be conducted within usual clinical hours (44%; n=107) or on their own time (40%; n=98), research activities are by necessity often secondary to patient care priorities. This finding is consistent with a previous survey finding that dedicated time is a major barrier to the conduct of research (12). The fact that more than a third of the hospitals reported a formal research

internship or fellowship program is encouraging. McLaughlin and colleagues (11) reported that 27% of Magnet hospitals offered an internship or fellowship program. These programs and greater integration with schools of nursing could provide dedicated mentor support.

Several methodological limitations should be considered in interpreting these survey results. First, it is likely that respondents to our survey and to the McLaughlin (11) survey did not distinguish between research and EBP even though the surveys consistently used the word research. Second, a single key informant answered the survey questions so there may be some bias in responses. Third, some questions from the original HNRRO survey were used for comparison purposes although questions that allowed respondents to check all that apply made it difficult to categorize response patterns. Lastly, the survey included only Magnet hospitals and does not reflect research activity in non-Magnet hospitals.

To advance the nursing research agenda, both nursing-specific infrastructure and resources and the evolving interprofessional research resources (e.g., clinical and translational science initiatives) must work in tandem. As noted by Phelan and colleagues in relating their experiences at a Veterans Administration hospital, nursing must capitalize on existing, underused resources to build research capacity (18). The imperative for interprofessional research teams provides a great opportunity for nurses to expand their membership on research teams beyond nursing, yet they must be adequately prepared. This will require obligated resources and support for clinical nurses if they are to advance their scholarship by working on such projects. Considering that only a third of responding hospitals reported interdisciplinary research councils, opportunities exist to improve formal structures that support collaborations among clinical disciplines. Nursing is well-positioned to take advantage of the growth of Clinical Translational Science Awards (CTSAs), which require greater interaction and collaboration across disciplines to develop interventions that improve the health of individuals and populations (19).

It is also important that nurse researchers and administrators clearly distinguish among QI, EBP, and research. Everyone must understand how they differ in terms of purpose, requirements for human

subjects, rigor, and dissemination (12). While having a single leader and committee structure for EBP and research may be efficient, it may dilute the research initiatives.

Nursing administrators should capitalize on clinical nurses' motivation and interest in working on nursing and interprofessional research. Nurses have important contributions to make in QI, EBP, and research but must be mentored and given the resources needed to serve as productive members of interprofessional teams. The growth of DNP-prepared nurses and collaborative EBP and research projects have a great potential to improve the quality of care.

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Table 1. Characteristics of Hospital Nursing Research Councils (N=249)

	N	%
<b>Number of Members</b>		
0-5	6	2.4
6-10	45	18.2
11-15	98	39.7
>15	98	39.7
<b>Membership</b>		
Elected	18	7.3
Assigned	49	19.9
Open to all interested	179	72.8
<b>Term limited</b>		
Yes	57	23.1
<b>If Yes, How many years?</b>		
1-2	6	11.0
2	39	70.9
3	9	16.4
5	1	1.8
<b>Types of nurses participating*</b>		
Clinical nurses	236	94.8
Advanced Practice nurses	197	79.1
Nurse educators	217	87.1
Managers/directors	213	85.5
Nursing faculty	132	53.0
Other	59	23.7
<b>Chair selection</b>		
Rotation	35	14.4
Appointed	105	43.2
Elected	103	42.4
<b>Are there minimum qualifications for the chair?*</b>		
Yes	172	69.1
<b>If Yes, what are the minimum qualifications?*</b>		
BSN	42	16.9
MSN	47	18.9
DNP	11	4.4
PhD	41	16.5
<b>Who routinely serves as chair?*</b>		
Staff nurse	113	45.4
Director Nursing Research	45	18.1
Clinical Nurse Specialist	34	13.7
Manager/director	32	12.9
Nurse with doctoral degree	30	12.1
Nurse educator	28	11.2
Nurse research coordinator	25	10.1
Nurse practitioner	6	2.4
Nurse faculty	5	2.0
Other	45	18.1

\*Note that respondents could "check all that apply" so frequencies do not sum to total and percentages do not add to 100%.

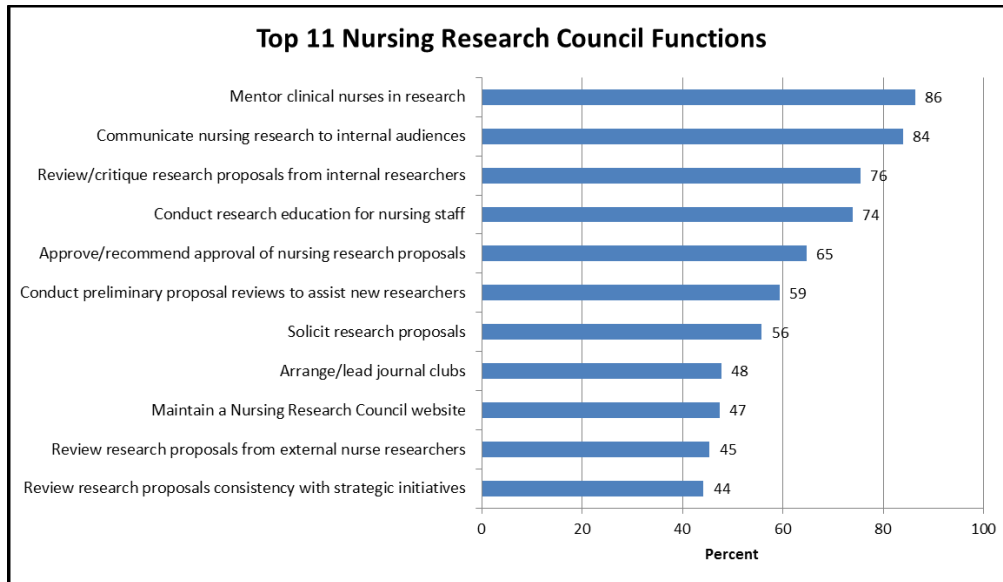


Figure 1. Top 11 nursing research committee/council functions

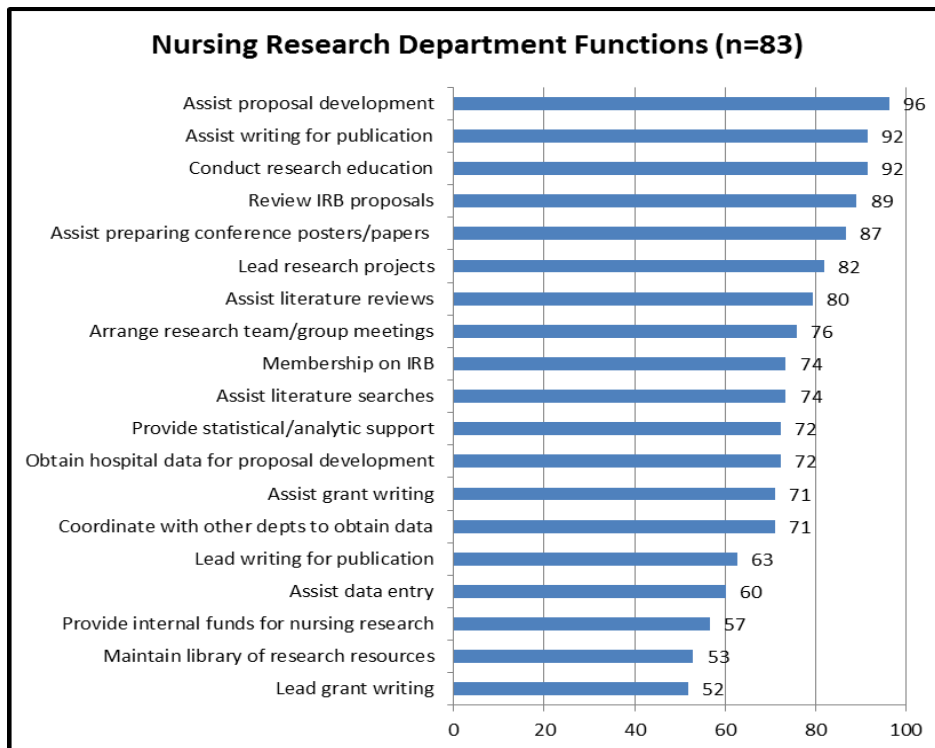


Figure 2. Nursing research department functions (n=83).

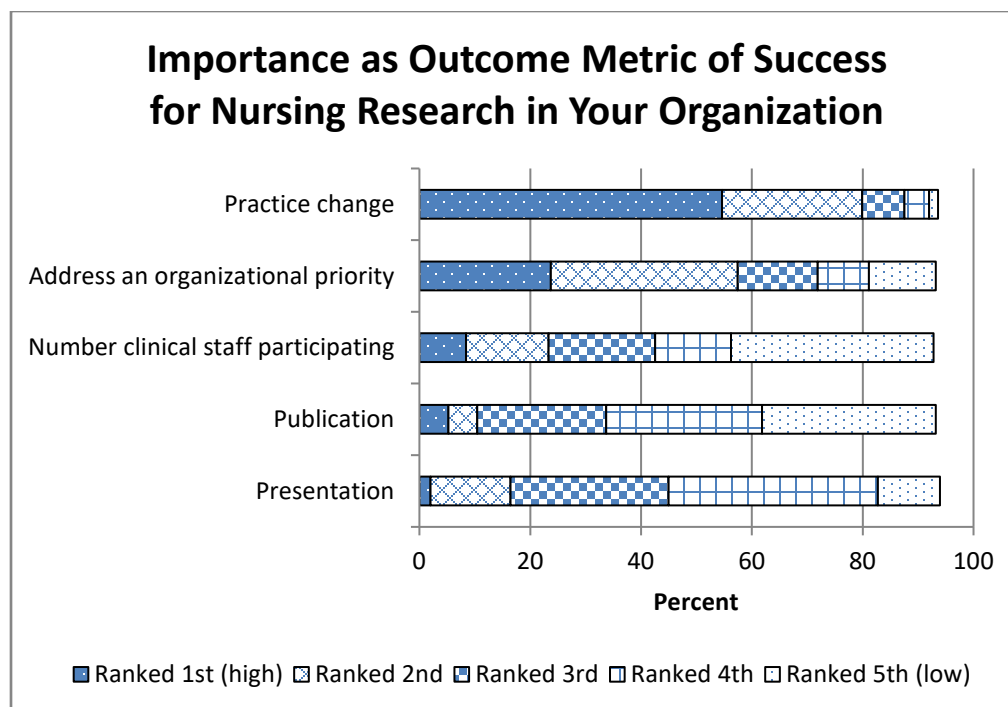


Figure 3. Importance of outcome as metric of success for nursing research