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RESEARCH SERIES PART 1

# NURSE SCIENTISTS: ONE SIZE DOESN'T FIT ALL

***Learn how to select the right researcher for your organization.***

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**THE NEED TO ADVANCE CLINICAL** inquiry is paramount in today's rapidly evolving healthcare environment, coupled with an exponential growth of healthcare-related knowledge. The Patient Protection and Affordable Care Act, with its emphasis on Accountable Care Organizations, requires healthcare institutions to determine the best approaches for delivering high-quality care while using resources judiciously.[1] Nurses must work to the full extent of their education to fulfill these requirements and become complete partners in redesigning the healthcare system, as noted in the Institute of Medicine's landmark Future of Nursing report.[2] Magnet® recognition helps advance both of these objectives.[3] For hospitals with or seeking

Magnet recognition, an active program of clinical inquiry and innovation is essential to interpret and apply the empirical quality results developed from the other four components of the Magnet Model: transformational leadership; structural empowerment; exemplary professional practice; and new knowledge, innovations, and improvements.[4]

Nurses in clinical practice who engage in clinical inquiry ask questions, seeking answers to inform and improve patient care outcomes and healthcare delivery. In healthcare organizations, clinical inquiry and innovation activities are operationalized through original research, quality improvement (QI) activities, and evidence-based practice (EBP).

Nurse executives' active engagement and transformational leadership are critical in fostering an environment of clinical inquiry and innovation to ensure that the necessary resources are intrinsically woven into the organization's cultural fabric. When designing and implementing a program of clinical inquiry and innovation, pragmatic considerations include institutional champions, nurse scientists to guide the program, and a budget appropriate for the scope of the desired activities. Because an organization's nurse scientists are central to establishing a culture of clinical inquiry and innovation, defining these roles and selecting appropriate personnel are requisite for program success.

We describe the basic roles of the nurse scientist, discuss the different nurse scientist models appropriate for operationalizing these roles and their contributions to clinical inquiry and innovation, and offer specific suggestions for selecting nurse scientists.

## Roles

The term *nurse scientist* lacks a precise definition. Generally, the nurse scientist role has a triple mission: help create and sustain a culture that embraces scholarly inquisitiveness, advocate for the uptake of knowledge and its application to practice and innovation, and conduct original research.[5] Although these activities advance a common goal, they're discreet entities with varied demands that require different skill sets. The focus of a nurse scientist's work depends on individual preparation and organizational needs; not all individuals who hold the title nurse scientist will necessarily function in each of these three areas.

The primary objective for nurse scientists who serve as directors of clinical inquiry and innovation programs is to provide leadership in developing a supportive culture for these activities. Key role functions include helping develop and maintain a supportive infrastructure; acquiring necessary resources for the program; and overseeing project formation, execution, and outcome dissemination. Program directors need to fully appreciate the challenges of conducting independent research and EBP, and have the necessary skill sets to conduct their own programs of scholarship, as well as mentor others.

Other roles commonly include implementing structured educational approaches designed to build capacity, such as overseeing nursing research grant programs and directing research internships. Additional specific institutional role obligations often include chairing the nursing research committee or serving on the institutional review board. To be able to function in all of these roles, nurse scientists who are directors of clinical inquiry and innovation programs need to be prepared with a research doctorate degree—either a PhD or DNSc—and have administrative experience appropriate for the complexity of the organization.[6]

PhD- or DNSc-prepared nurse scientists are specifically educated to advance the discipline through scientific pursuit of new knowledge, with the theories, methodologies, and other skills (such as authorship and grantsmanship) needed for success.[7] This is an important role function because conducting original research is necessary to generate new nursing knowledge, although it's a resource- and time-intensive activity. Because research findings contribute to knowledge development incrementally across studies, research groups, and settings, the nurse scientist's home organization is unlikely to immediately benefit from the results of a single study.

However, there are other organizational benefits as staff members witness the research process firsthand and often participate in select phases of the research. Ideally, exposure to research activities helps frontline nurses critically think about the care they provide while instilling in them the need to develop and use evidence relevant to their practice.

In our current practice environment, administrators may have the inclination to dispense with performing original research in favor of advancing

EBP. Building original, in-depth knowledge specific to nursing care, however, is essential for EBP and improved patient outcomes. Nurse researchers who are clinically based are more likely to investigate phenomena directly relevant to their practice setting. The ability to reframe current practice situations, identify research questions, and generate creative responses is linked directly to skills gained through doctoral study.[8]

More recently, individuals prepared with a DNP degree are assuming some of the organizational responsibilities for clinical inquiry; the term practitioner-researchers is being ascribed to those functioning in this role.[9,10] Although not educated to conduct original research, these individuals are prepared as leaders in the integration of knowledge from diverse sources that's needed for QI and systems change.[6] Effectively operationalizing the dissemination, uptake, and usage of knowledge requires a strong understanding of EBP and QI methodologies. As such, DNP-educated nurses are well positioned to work with staff in conducting EBP, QI, and outcomes management projects.[9] Because the most pertinent QI and EBP questions come from nurses at the point of care, these activities promote scholarship at the unit level.

Both original research and EBP activities are required by the Magnet Recognition Program.®[4] These reasons underscore the need to create a balance between the short-term gains of EBP activities, the long-term investment in original research, and the personnel to lead these activities. When PhD- and DNP-prepared nurses work collaboratively, they can readily advance an institutions' program of clinical inquiry and innovation.[11]

**Table 1: Nurse scientist roles and related activities**

**Create a culture that embraces scholarly inquisitiveness**
- Offer continuing-education units for participation in nursing grand rounds
- Sponsor journal clubs
- Include involvement in QI, EBP, or research activity on every level of the career ladder
- Arrange for tuition reimbursement, grants, release time for projects, and travel monies for conference attendance
- Reward QI, EBP, and research at annual Nurses Week events
- Incorporate clinical inquiry initiatives in each department/unit's goals and priorities

**Advocate for the uptake of knowledge and its application to practice and innovation**
- Train staff members in EBP
- Ensure formalized opportunities for participation, such as EBP fellowships and specialty focus teams
- Require an EBP approach for policies and procedures development
- Form EBP teams by unit or core service line
- Facilitate and encourage membership in professional organizations

**Conduct original research**
- Provide statistical consultation
- Create the necessary infrastructure for external grants, such as an office of sponsored programs

## Practice models

Nurse scientist practice models can be conceptualized differently depending on the organizational environment and other external factors, including geographic locale and affiliations with academic institutions. Various models that address the three key components of clinical inquiry and innovation activities are neither rigid nor static, but are presented here as singular entities to help administrators see the possibilities and determine the best mix and fit for their organizational culture and strategic initiatives. Institutions seeking to operationalize the empiric outcomes required by the Magnet Model may benefit from using a combination of components across these approaches.

When choosing a model to implement, institutions should plan which nurse scientist roles and activities are priorities to ensure that the chosen model supports the desired outcomes. (See *Table 1.*) Specific benefits and limitations of nurse scientist roles within these models for both the institution and the individual are listed in *Table 2.*

### In-house nurse researcher

In this model, the nurse scientist is a direct employee of the healthcare institution. Organizational structures may vary depending on funding or need. Nurse scientist positions may be centralized, reporting directly to the institutional governance; decentralized, reporting as nursing staff; or may report to a specialty division, such as orthopedics or oncology. Personnel are selected due to their research expertise and experiences, as well as their fit with the institution's vision and mission.

The priority for the nurse scientist is to conduct a program of original research on a relevant clinical issue. Individuals functioning in this role are deftly positioned to meld clinical inquiry opportunities with clinical practice questions. Studies should be of significance to the home institution, but with findings that are generalizable beyond its borders. Collaboration with other scientists working in similar areas results in a body of knowledge used by professional organizations and policy institutes to ultimately change standards of practice. Examples of nursing research programs that have significantly changed practice include symptom management, transition planning, and family participation in care.

The nurse researcher often functions within a larger university-based multidisciplinary team. Although the work may not be very visible to nursing staff, opportunities are created to mentor selected nurses who are interested in the study, want to learn research skills, or are considering returning to graduate school. Additional roles for the in-house nurse scientist include helping build the institutions' infrastructure and leadership of applicable organizational clinical and research programs.

Evaluation metrics for nurse scientists working in this model focus on the quality of the research as measured by: 1) refereed articles published in respected journals; 2) professional presentations at local, national, and international meetings; 3) the type and amount of grant funding or other support; and 4) the researcher's influence in the broader scientific community. Although this last metric is less tangible, it's essential not only for the development of knowledge, but also the visibility of nursing within the organization.

**Table 2: Benefits and limitations of nurse scientist roles**

| | Benefits for the hospital | Benefits for the nurse scientist | Limitations for the hospital | Limitations for the nurse scientist |
|---|---|---|---|---|
| **In-house nurse researcher model** | • Nurse scientist integrated into organizational infrastructure<br>• Consistent on-site availability<br>• Reliable organizational nursing research presence<br>• Integrated, hospital-based program of research provides:<br>—staff exposure to clinical research<br>—staff training opportunities<br>—a resource for staff scholarly activities | • Opportunity to be part of a clinical environment | • Often more costly<br>• Program of research may be limited to one scientist's research strength or area of interest | • Risk of isolation from academic peers |
| **Academic partnership model** | • Direct access to university resources or ability to share resources<br>• Relatively inexpensive way to advance clinical inquiry<br>• May use funds outside of designated full-time equivalent (FTE) positions<br>• Synergies between agencies | • Direct access to patients for clinical research<br>• May result in salary supplementation | • University support can vary due to faculty availability, teaching demands, and so on<br>• Limited availability of university schools of nursing<br>• Hospital and university calendars are different | • Potential for role overload<br>• Need for balancing conflicting priorities<br>• Need for balancing own program of research with the institution's<br>• Professional isolation |
| **Consultant model** | • Focus can be narrowed to a specific area of inquiry<br>• Relatively inexpensive way to advance clinical inquiry<br>• No designated FTE required<br>• Nurse scientist available to staff, even though not often on site | • Can augment other positions<br>• Flexible<br>• Can limit involvement to areas of expertise and interest | • Limited availability for 1:1 mentorship<br>• Necessary on-site support may not be available<br>• Difficulty coordinating activities | • Difficult to provide adequate mentoring for multiple projects<br>• May require additional time due to limited institutional resources<br>• Limited understanding of institution-specific review processes |

### Academic partnership

In this common model, a formalized partnership between the healthcare institution and a university is created to promote collaboration on clinical inquiry and innovation activities. Although these arrangements are in place in many academic medical centers where there's a unified structure across nursing education and practice, they can also be established through memoranda of understanding or formal contractual arrangements. One or more faculty members commit a designated percentage of their work time to the agency. Faculty members are selected by having the necessary skill set and a willingness to assume this role.

Role functions for nurse scientists in this model often include conducting independent research, seeking external funding, facilitating nursing research committee goals, helping oversee compliance with regulatory research standards, and mentoring staff in developing the necessary skill sets needed to successfully engage in scholarly activities.[12] Such activities may include conducting literature reviews, submitting conference abstracts, designing and implementing conference presentations, or conducting grant writing and publication workshops.

Other important role functions are those that help maintain the scientific integrity of an institution's clinical inquiry activities. These may include serving on the healthcare organization's nursing research committee or helping prepare institutional review board documents. In this role, nurse scientists are in an ideal position to champion EBP and research activities jointly conducted by agency staff and university students or faculty. They can also serve as a liaison for students and faculty who have their own research agendas, helping ensure that the focus of their activities is aligned with the organization's strategic agenda and advancing the mission of high-quality patient care.

For these positions to be successful over time, attention to the needs of both the academic and practice arenas must be considered. Evaluation metrics for nurse scientists working in this model are highly varied and determined by the objectives and scope of activities included in the partnership agreement. However, one metric must demonstrate that both the practice and academic institutions benefit from the arrangement to ensure long-term organizational commitment and role stability. This is essential because the impact of scholarly endeavors often takes years to be realized.

### Consultant

A consultant is a professional who provides expert advice on a specific topic. Nurse scientists in this model may be either internal to the organization or hired on a per project basis. This model differs from others in that the consultant's commitment is project and time specific. Internal consultants are personnel who have a percent of their effort tasked to specific clinical inquiry activities for a designated length of time. External consultants have a contractual agreement outside of the institution and are commonly individuals retired from academia or service with nursing research experience or faculty members working beyond their academic role.

The overarching benefit of this model is that consultants can be selected with the specific expertise required for a project. External consultants, however, may lack the organizational familiarity needed to help ensure the project's success. Evaluation metrics are directly derived from the

***In the in-house researcher role, the priority for the nurse scientist is to conduct a program of original research on a relevant clinical issue.***

scope and objectives of the prescribed tasks.

Advances in Internet and web-based conferencing allow knowledge uptake across distant sites. Remote knowledge uptake is particularly useful for consultants and nursing services of smaller community and rural hospitals not in close proximity to academic institutions. Less research-savvy nursing staff members can now have access to resources that would otherwise be unavailable.[13] Despite the potential of distance learning approaches, nurse scientists' expertise may be difficult for organizations to harness in a meaningful way. Because they're out of sight for many staff members, they're also out of mind. A credibility gap may exist between the advice offered and current practice realities.

***When selecting nurse scientists, consider their fit with the objectives of your organization's mission, size, patient population, geographic location, and strategic plan.***

### Designing a clinical inquiry program

When designing a robust clinical inquiry and innovation program and selecting nurse scientists, an organization's strategic initiatives must be considered. Depending on organizational structure, programs may be housed either within the nursing department or at the hospital level. Because clinical inquiry initiatives frequently cross service lines, settings, and disciplines, interdisciplinary support is required.

Organizational characteristics associated with a successful clinical inquiry and innovation program are resonant leadership within nursing and hospital administration, nurse scientist representation on the senior nursing leadership team, quality librarian and literature retrieval resources, and an adequate budget to support the program's objectives. Including the nurse scientist program as a fixed line in either nursing's or the larger institution's administrative cost centers symbolizes organizational commitment to the endeavor. Relational capital, which refers to the collaborative work and investment among individuals to advance common goals or knowledge discovery and uptake, is requisite for the development of a sustainable knowledge culture.[14]

When selecting nurse scientists, administrators must consider their fit with the objectives of the organization's mission, size, patient population, geographic location, and strategic plan. A nurse scientist's academic preparation; history of scholarly productivity, including successful refereed publications and grants; and previous experience with clinical research and EBP all need to be considered. No one person with a single skill set can address all of the organization's clinical inquiry needs.

By combining the different nurse scientist models and selecting individuals with varying backgrounds and skill sets, CNOs can build successful clinical inquiry programs regardless of their institution's size. Because success begets success, visibility of clinical inquiry and innovation outcomes is essential for nursing recognition and program advancement.

Expectations must be realistic if insufficient and insecure funding is an issue. It's important that responsibilities in the position description clearly support the nursing department's and larger organization's strategic plans. Ideally, nurse scientists will help produce measurable outcomes that improve the efficacy and efficiency of patient care in high-priority areas. Such evidence supports the need for the clinical inquiry and innovation program.

Nurse scientists often report tension between meeting organizational and individual goals. When other organizational goals viewed as being of higher priority are realigned, current clinical inquiry and innovation activities

may be considered unresponsive to organization needs. This is of particular concern if hospital and nursing leadership generally perceive that research and innovation activities are vaguely important, but don't see significant benefit for their institution.

It's unrealistic to expect nurse scientists to advance their own programs of research while simultaneously leading the development of a vigorous organizational clinical inquiry program and mentoring a cadre of nurses engaging in clinical inquiry initiatives on a wide array of topics using diverse methodologies. As in academia, nurse scientists conducting independent research need protected time, research seed monies, and adequate personnel resources to successfully compete for major research and program grants. This is especially important if there's an organizational expectation that they're responsible for funding a portion of their positions in this manner.

There's increasing evidence that recent graduates of doctoral programs are assuming nurse scientist positions in clinical organizations.[15,16] Such individuals, especially those who are skilled clinicians, hold tremendous promise to advance clinical inquiry and innovation programs. But in the same way that newly minted RNs need time to develop their clinical skills, recently graduated PhD- or DNP-prepared nurses are novices to clinical inquiry and need time and tutelage by seasoned research mentors to develop their skill sets.[15] Their time should be spent in establishing their own research credentials and expertise so that, at later points in their careers, they have the scientific credibility and political savvy to advance the clinical inquiry programs of complex organizations.

When evaluating an organization's clinical inquiry and innovation program, it's imperative to determine the desired outcomes beforehand, followed by specific identified intervals for systematic review.[17] Clinical inquiry programs require personnel support appropriate for their scope. Access to librarians, statisticians and data analysts, research assistants, administrative assistants, and sponsored program personnel is invaluable.

Although only the largest medical centers may employ the full cadre of necessary personnel, smaller institutions can contract with individuals or barter with external institutions for necessary support. Care must also be taken to not overly burden the program director with administrative tasks so that he or she is unable to conduct original research, should this be an organizational goal.

Conducting a periodic gap analysis can help provide direction, indicating strengths and areas for improvement.[18] Specific research and EBP activities within clinical inquiry programs can contribute to each facet of the outcomes depicted in the Magnet Model, including clinical, workforce, patient and consumer, and organizational outcomes.

***Robust clinical inquiry and innovation programs stem from meaningful collaboration among nurse scientists, administrators, educators, clinical nurses, and interdisciplinary partners.***

### Robust or bust

With a growing presence in today's healthcare environment, the nurse scientist role is a viable career option for doctorally prepared nurses. Nurses with PhD degrees are educationally prepared to lead all aspects of clinical inquiry and innovation programs. Nurses with DNP degrees are educationally prepared to improve nursing practice by investigating and implementing EBP and QI. Robust clinical inquiry and innovation programs are created through meaningful collaboration among nurse scientists, administrators, educators, clinical nurses, and interdisciplinary partners. Fostering equal value across stakeholders helps

build trust and empower nurses to question their practices by developing, testing, and implementing evidence-based solutions. Ultimately, these activities mutually benefit both stakeholders and patients. NM


**REFERENCES**

1. Centers for Medicare and Medicaid Services. Accountable care organizations. https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/ACO/index.html?redirect=/ACO/.
2. Institute of Medicine. *The Future of Nursing: Leading Change, Advancing Health.* Washington, DC: National Academies Press; 2010.
3. Kutney-Lee A, Stimpfel AW, Sloane DM, Cimiotti JP, Quinn LW, Aiken LH. Changes in patient and nurse outcomes associated with Magnet hospital recognition. *Med Care.* 2015;53(6):550-557.
4. American Nurses Credential Center. *2014 Magnet Application Manual.* Silver Spring, MD: American Nurses Credential Center; 2013.
5. Brant JM. Bridging the research-to-practice gap: the role of the nurse scientist. *Semin Oncol Nurs.* 2015;31(4):298-305.
6. American Association of Colleges of Nursing. The essentials of doctoral education for advanced nursing practice. www.aacn.nche.edu/publications/position/DNPEssentials.pdf.
7. American Association of Colleges of Nursing. Indicators of quality in research-focused doctoral programs in nursing. *J Prof Nurs.* 2002;18(5):289-294.
8. Berger AM, Eilers JG, Heermann JA, Warren JJ, Franco T, Triolo PK. State-of-the-art patient care. The impact of doctorally prepared clinical nurses. *Clin Nurse Spec.* 1999;13(5):259-266.
9. Melnyk BM. Distinguishing the preparation and roles of doctor of philosophy and doctor of nursing practice graduates: national implications for academic curricula and health care systems. *J Nurs Educ.* 2013;52(8):442-448.
10. Vincent D, Johnson C, Velasquez D, Rigney T. DNP-prepared nurses as practitioner-researchers: closing the gap between research and practice. www.doctorsofnursingpractice.org/wp-content/uploads/2014/08/Vincet_et_al.pdf.
11. Murphy MP, Staffileno BA, Carlson E. Collaboration among DNP- and PhD-prepared nurses: opportunity to drive positive change. *J Prof Nurs.* 2015;31(5):388-394.
12. Pinkerton S. Advancing the profession: how will we do it? *Nurs Econ.* 2009;27(2):131-133.
13. Burns HK, Dudjak L, Greenhouse PK. Building an evidence-based practice infrastructure and culture: a model for rural and community hospitals. *J Nurs Adm.* 2009;39(7-8):321-325.
14. Cummings GG, Estabrooks CA, Midodzi WK, Wallin L, Hayduk L. Influence of organizational characteristics and context on research utilization. *Nurs Res.* 2007;56(4 suppl):S24-S39.
15. Broome ME. The nurse scientist...A unique contribution to nursing's future. *Nurs Outlook.* 2011;59(1):1-3.
16. Pringle D. Getting the right researcher into the right position: importance in healthcare organizations. *Nurs Leadersh (Tor Ont).* 2007;20(1):1-3.
17. Downie J, Ogilvie S, Wichmann H. A collaborative model of community health nursing practice. *Contemp Nurse.* 2005;20(2):189-192.
18. Ravert P, Merrill KC. Hospital nursing research program: partnership of service and academia. *J Prof Nurs.* 2008;24(1):54-58.


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The authors and planners have disclosed no potential conflicts of interest, financial or otherwise.

DOI-10.1097/01.NUMA.0000511917.44775.95