Judy Murphy

The Nursing Informatics Workforce: Who Are They and What Do They Do?

Executive Summary

- Nursing informatics has evolved into an integral part of health care delivery and a differentiating factor in the selection, implementation, and evaluation of health IT that supports safe, high-quality, patient-centric care.
- New nursing informatics workforce data reveal changing dynamics in clinical experience, job responsibilities, applications, barriers to success, information, and compensation and benefits.
- In addition to the more traditional informatics nurse role, a new position has begun to emerge in the health care C-suite with the introduction of the chief nursing informatics officer (CNIO).
- The CNIO is the senior informatics nurse guiding the implementation and optimization of HIT systems for an organization.
- With their fused clinical and informatics background, informatics nurses and CNIOs are uniquely positioned to help with "meaningful use" initiatives which are so important to changing the face of health care in the United States.

Judy Murphy

TO MARK MY FIRST anniversary as a *Nursing Economic$* columnist, I would like to revisit the nursing informatics (NI) workforce, since so much has happened in the last year related to health information technology and the implementation of electronic health records. In my inaugural column, I described NI as a well-established specialty within nursing, provided background on the birth and evolution of NI, and explored the NI scope of practice and certification (Murphy, 2010). But I did not elaborate on the unparalleled potential of NI and the NI workforce as we move into the era of practice transformation enabled by health information technology (HIT). There is no question nursing informatics has evolved into an integral part of health care delivery and a differentiating factor in the selection, implementation, and evaluation of health IT that supports safe, high-quality, patient-centric care. So, let's explore the why's and how's of that statement, and take a closer look at the NI profession's reality and potential in this age of meaningful use.

First, we will look at the NI workforce as a whole by examining select results from the Healthcare Information and Management Systems Society 2011 Nursing Informatics Workforce Survey (HIMSS, 2011). In this survey, data were collected to gain a better understanding of the background of informatics nurses, the issues they address daily, and the tools they use in their jobs. Data from the 2011 survey were also compared to similar surveys done previously (HIMSS, 2004; HIMSS, 2007), in order to gain insights into how the NI profession and roles have changed over the years.

Next we will examine the up-and-coming role of the chief nursing informatics officer (CNIO) and look at how this function augments the informatics nurse and the chief nursing officer (CNO)/chief nursing executive (CNE) position, and adds benefit to the organization. Finally, we will discuss how the nursing informatics workforce is uniquely positioned to help with the federal incentives for clinician adoption of electronic health records spelled out in the American Recovery and Reinvestment Act and its Health Information Technology Act component.

HIMSS 2011 Nursing Informatics Workforce Survey

Participation in the survey was solicited using NI organizations' email distribution lists, with a total of 660 usable responses obtained. Data collection was completed in December 2010 and January 2011 using a web-based survey. The results showed the following primary workplaces: about half at hospitals, 20% at health care systems' corporate offices, 9% in academic settings, 5% in consulting firms or vendors, and the remaining working at a variety of organizations, including ambulatory facilities, home health agencies, managed care/insurance companies, or government/military facilities. Survey results regarding education background of informatics nurses indicated 56% held post-graduate degrees (35% with a master's degree in nursing, 1% with a PhD in nursing, 24% with a master's degree in a field other than nursing, and 3% with a PhD in a field other than nursing). Nineteen percent of the respondents held nursing informatics certification from the American Nurses Credentialing Center.

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Clinical experience. As for clinical experience, 46% spent at least 16 years at the bedside prior to becoming an informatics nurse, 20% had 11-15 years of clinical experience, and the remaining 34% had 10 years of experience or less. In terms of tenure in the NI role, 26% had been in the role more than 5 years, 30% for 3-5 years, and 44% for 2 years or less. These survey demographics are actually quite interesting, as they parallel the overall demographics of the profession fairly well, and provide an insight into this nursing specialty.

Reporting structure. The reporting structure for informatics nurses includes: 42% report within the information technology department, 32% report to nursing, 22% report to administration, and the remaining 4% report to varying small departments. Sixty-one percent of the respondents reported no direct reports, 9% mentioned one to two individuals reported to them, 16% indicated three to five individuals reported to them, and the remaining 14% mentioned 11 or more people reported to them.

Job responsibilities. As in 2004 and 2007, the 2011 respondents identified systems implementation (57%) and systems development (53%) activities as their top two job responsibilities. Implementation includes activities such as preparing users, training, and providing support. System development includes customizing and/or updating a vendor system or developing and/or updating an in-house system. Quality initiatives, which include system evaluations/problem solving and quality improvement/patient safety, were the third most mentioned job responsibilities (31%). Quality initiatives are mentioned in the top three for the first time since the triennial survey was initiated in 2004.

Applications. Respondents identified the types of systems for which they were presently participating in the development or implementation process. Nursing/clinical documentation was selected by 77% of respondents in 2011 (unchanged from 2007). The next highest applications selected were electronic health records (62%), computerized practitioner order entry (60%), and clinical information systems (58%). This illustrates a shift in the focus of informatics nurses, as electronic health records were not in the top four systems in either of the previous surveys. Clinical information systems slipped to the fourth spot, which represents a departure from previous surveys where clinical information systems was the highest mentioned application.

Barriers to success. The past 3 years have resulted in a change in the largest barrier to the success of informatics nurses. Financial resources are no longer the most identified barrier to success as mentioned in the 2004 and 2007 surveys. This year lack of integration/interoperability was mentioned most frequently as the top or secondary barrier, and financial resources dropped to the second highest barrier. Respondents were least likely to identify HIPAA regulations as a barrier.

Information. Over the course of all three surveys, websites and the Internet were the resources most valuable for carrying out day-to-day job activities. While list servs were among the next highest mentions in 2004 and 2007, in 2011, networking became the second highest mentioned source for day-to-day job activities. As for continuing education credit sources, distance learning (e.g., audio conferences or webinars) was rated the highest, while national conferences were considered the top selection for continuing education.

Compensation and benefits. The average salary of 2011 respondents is $98,702, compared to $83,675 in 2007 and $69,500 in the 2004 surveys, demonstrating the increasing maturity and value of the specialty. The average salaries reported in 2011 are almost 16% higher than in 2007 and 42% higher than in 2004.

Conclusion. The health care industry is increasingly recognizing the value of nursing informatics. One metric in particular speaks to the importance of informatics nurses in the health care industry — base salary. The level of base compensation this year is significantly more than in the past two surveys, with an average salary of nearly $100,000 (and even higher in consulting and in vendor settings). This is impressive considering the current economic landscape. Future surveys will determine whether the base compensation ceiling has been reached. Another important finding is the statistically significant increase of post graduates (those with master's degrees and/or PhDs) in the specialty in 2011, marking a positive trend that the NI profession continues to attract from a highly qualified and formally educated demographic. Finally, it's worth noting the 2011 respondents tended to have less clinical experience than their 2007 and 2004 counterparts, but they have more experience as nurse informaticists. About two in five nurse informaticists in the 2011 survey have been in this position for 10 years or more, compared to only one-third in 2007 and one-quarter in 2004.

The Evolving Role of the CNIO

In addition to the more traditional informatics nurse role, a new position has begun to emerge in the health care C-suite with the introduction of the chief nursing informatics officer. The CNIO is the senior informatics nurse guiding the implementation and optimization of HIT systems for an organization. The word "nurse" in the acronym does not necessarily mean nursing is the only discipline for which they are responsible; but rather the position is typically filled by a nurse who has experience and education in informatics. Organizations have just begun to use this title over the last few years, so other titles are also still used to describe the most senior nursing position in HIT, such as vice president of nursing informatics and vice president of clinical integration.

The key job responsibilities for this senior-level position capitalize on their nursing informatics knowledge and skills to be both a strategic and a tactical/operational leader. Examples of the CNIO strategic role include activities such as guiding an electronic health record (EHR) system selection process, defining an HIT governance process, engaging senior executives in the culture and practice changes required when an EHR is being implemented, advising on the sequencing for EHR module implementations, consulting on the methodology for implementation (big bang vs. incrementally phased), and assisting in identifying appropriate value proposition and key performance indicators for an HIT implementation. CNIO tactical/operational leadership examples include providing oversight of system design and implementation, creating implementation and key performance indicator score cards, determining an enhancement request system and the corresponding prioritization process, and staffing ongoing process improvement initiatives. Inherent in both the strategic and tactical/operational components is the CNIO role as educator — the ability to explain what is possible with deployment of health technology, and how the interplay with people and process changes must be considered to realize the full benefits of implementation.

Critical to the success of the CNIO is the relationship with three key stakeholders in the organization: the CNO or CNE, the CIO, and the chief medical informatics officer (CMIO). The CNIO usually reports either to the CNO/CNE or the CIO with a dotted line to the other. Either structure appears to be effective. Another important linkage is the matrix relationship to the CMIO. Being a member of both the IT and nursing leadership teams invariably leads to some periodic challenges, but maintaining relationships among these key leaders is essential.

The CNIO provides a number of benefits to an organization. At a strategic level and permeating throughout the organization, she/he serves as a strong advocate for the adoption of HIT. The CNIO understands the importance of heavy clinical involvement in all aspects of HIT implementation and subsequent workflow optimization and clinical transformation. She/he can champion the redesign of clinical workflow and processes essential for the adoption of new technology. She/he knows the link between technology and outcomes, and can ensure performance measurement of both clinical and financial outcomes. Finally, from an operational standpoint, the CNIO can help "rally the troops" for clinical involvement in all aspects of the HIT system lifecycle.

The Age of Meaningful Use

It is hard to pick up a health care magazine or attend a health care conference today without hearing about "meaningful use" and the federal incentives for clinician adoption of electronic health records with the passage of the American Recovery and Reinvestment Act and its key Health Information Technology Act in early 2009. Many health care organizations are scrambling to select, implement, enhance, or measure the care impact of EHRs to achieve the "meaningful use" criteria and qualify for Centers for Medicare & Medicaid Services incentive payments. Having a qualified workforce to facilitate these tasks will be essential to accomplishing them. This is where our nursing informatics workforce has an impact. With their fused clinical and informatics background, informatics nurses and CNIOs are uniquely positioned to help with these initiatives which are so important to changing the face of health care in the United States.

At the core of the new reform initiatives, the incentivized adoption of EHRs will improve care quality and better manage care costs, meeting clinical and business needs by capturing, storing, and displaying clinical information when and where it is needed to improve individual patient care and to provide aggregated, cross-patient data analysis. EHRs will manage health care data and information in ways that are patient centered and information rich. Improved information access and availability will increasingly enable both the provider and the patient to better manage each patient's health by using capabilities provided by enhanced clinical decision support and customized education materials.

Dr. David Blumenthal, former national coordinator for health information technology, summed it up when he said, "I believe that when we look back on the road we traveled, the year 2011 will stand out not merely as one more milestone, but as the time when medical care entered a new era — the age of meaningful use of health information...We have indeed entered the age of meaningful use — a time of action and transition, a time of opportunity and challenge, and hopefully a time for keeping our eye on the ball. Success is not guaranteed. Hard and focused work has brought us this far, and more of the same lies ahead" (Blumenthal, 2011).

More than a decade ago, the Institute of Medicine's (2001) landmark report stated: "Between the health care we have and the care we could have lies not just a gap, but a chasm." HIT has long been seen as a fundamental enabler for closing that chasm and delivering the care we should have. This is our time to use our nursing expertise and our nursing informatics knowledge to ensure that statement becomes a reality. **$**

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Thriving on Innovative Technology

To the Editor:

We are nursing students at Curry College in Milton, MA. We applaud Judy Murphy's wonderful article, "Nursing and Technology: A Love/Hate Relationship," published in the November/December (2010) issue of *Nursing Economic$*. It is worth mentioning Ms. Murphy's belief that nurses should lead the charge in using technology when it comes to implementing information technology in clinical practice. Thus, turning nursing and technology from a "love/hate relationship" into a "true marriage" is important in nursing practice.

As nursing students, we have worked in a variety of health care settings with the majority using health information technology (HIT) such as electronic medication administration records and quality improvement methods such as Transforming Care at the Bedside (TCAB). Although TCAB is a quality improvement initiative, having HIT systems in place contributed to achieving improved, safe, reliable, and quality care of patients. We will be completing our clinical rotation on a medical-surgical unit that has implemented the TCAB initiative. Using HIT systems and a quality improvement initiative in our clinical experience has not hindered our workflow process, time management, and quality of patient care; rather it streamlines the nursing care process. For example, scanning a patient's identification band along with each individual medication at the bedside may be time consuming, especially when a patient takes more than a dozen medications at once. However, we see it as simply allowing us to spend more time with our patients.

While Ms. Murphy emphasizes the importance of nursing and technology being in harmony, we would also like to emphasize that the Institute of Medicine's report "The Future of Nursing: Leading Change, Advancing Health" without any doubt expects HIT to lead the change and advance our health care practices. According to Skiba (2010), nurses are "expected to use a variety of technological tools and complex information management systems that require skills in analysis and synthesis to improve the quality and effectiveness of care." Skiba (2010) further states "if we are truly at the crossroads of transforming health care, nurses must have the knowledge and skills to use disruptive innovations to facilitate and encourage new methods to deliver health care." Introduction of any new innovation to practice can be cumbersome to the flow of health care. Since nurses are at the front-line of patient care, we have the ability to lead this charge in using information technology to facilitate improving health care delivery.

Our generation of undergraduate nursing students currently thrives on innovative technology, such as use of laptops, iPads, and smartphones. New nursing graduates must embrace this synergy – nursing and information technology.

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