The Importance of Being Measurable:
Quantifying Nursing Quality

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Abstract

Through a review of journal articles and other literature, this paper highlights some of the challenges and rewards of designing, implementing, and interpreting quantitative measurements of the contribution by registered nurses to the quality of care in an inpatient setting. As performance measurement becomes the standard response to the rising demand for high-quality and low-cost hospital care, the nursing profession has powerful incentives to develop and utilize nursing-sensitive quality indicators. Through the use of pilot studies, research, education, and practice can be applied towards developing nursing-sensitive quality indicators and measurement methodology. In this way, nurse researchers can work hand in hand with government agencies and hospital administrators to test and refine new approaches to measuring nursing contribution to patient health outcomes (some of which may be adapted from other disciplines) that will then be assessed thoroughly in other settings to determine their applicability on a wider scale.

Cost and safety concerns have put the spotlight on hospitals to manage and improve their quality of care. The cost of healthcare delivery is a significant strain on the United States because it doubles every 10 years, irrespective of the health of the economy. From 1995 to 2005, overall national health expenditures increased by 94% (Centers for Medicare & Medicaid Services, 2007b). Overall national health expenditures are estimated to increase by 94.9% between 2006 and 2106 (Centers for Medicare & Medicaid Services, 2007c). The cost of hospital healthcare delivery is growing at a slightly higher rate. From 2006 to 2106, the Centers for Medicare & Medicaid Services project a 97.6% increase in hospital care expenditure nationwide (2007c). Hospital care is an even greater burden for certain states. In 2004, hospital care expenditures per capita in Massachusetts and Alaska were 35.7% and 34.4%, respectively, higher than the hospital care expenditures per capita of the United States (Centers for Medicare & Medicaid Services, 2007a).

The high price tag, unfortunately, does not always translate into high quality care. A series of prestigious research publications expose the shocking extent of substandard care in hospitals (Kohn & Donaldson, 2000; Committee on Quality of Health Care in America, 2001; Page, 2003; Aspden, Wolcott, Bootman, & Cronenwett, 2007). Recounting several highly-publicized patient fatalities, the Institute of Medicine estimates that nationwide about 48,000 to 98,000 patients die in hospitals every year from preventable medical errors (Kohn & Donaldson, 2000). Hospital errors that do not cause deaths are still costly in monetary terms. The Institute of Medicine further estimates the national cost of preventable medical errors in hospitals at $17 to $29 billion a year, of which the cost of medication errors alone is at least $3.5 billion (Kohn & Donaldson, 2000; Aspden, Wolcott, Bootman, & Cronenwett, 2007). Coincidentally, $3.5 billion is also the loss reported in Pennsylvania from 19,154 incidences of hospital-acquired infections in 2005 (Pennsylvania Governor's Office of Health Care Reform, 2007). It is evident that substantial cost savings can be achieved merely by ensuring a basic level of care that would reduce the frequency of medical errors and fatalities.

As primary payors, state and federal governments and private insurers have exerted considerable pressure on healthcare providers and hospitals to lower costs. In 2005, 80.3% of overall national health expenditures was paid by government (45.4%) and private insurers (34.9%) (American Hospital Association, 2007). Likewise, of the $536.3 billion in 2003 hospital revenues, $436 billion (or 81.3%) were paid by government and private insurance (U.S. Census, 2005). Both public and private sectors have a strong interest in containing healthcare costs. As federal and state governments struggle to meet rising demand with

shrinking revenues, healthcare, including hospital care, is vulnerable to cutback because, in the minds of many critics, it consumes a disproportionate portion of the economy. By 2016, national health expenditures are estimated to reach $4.14 trillion or about 19.6% of GDP; hospital care spending will similarly reach about $1.29 trillion, or about 6.1% of GDP (Centers for Medicare & Medicaid Services, 2007c). Pennsylvania provides an example of the impact of healthcare cost on private insurance. Family health insurance premiums in Pennsylvania rose 75.6% from 2000 to 2006, far outpacing inflation (17%) and median wages (13.3%) (Pennsylvania Governor's Office of Health Care Reform, 2007). Consequently, hospitals must manage an increasingly constrained budget to deliver high-quality care.

The Impact of Quality Measurement

Performance measurement is crucial to improving the delivery of quality patient care in hospitals. At a minimum, it forms a reliable basis for internal and external accountability. If a program's effectiveness in providing quality patient care cannot be measured, there is no objective way to justify its budget (or perhaps even its existence) to hospital administrators or Medicare. Performance management is also a tool for internal and external oversight authorities to monitor programs to ensure that appropriate standards are maintained. More constructively, performance measurement can lead to quality improvement. Through quantitative measurement of quality of care, a program can be compared against accepted standards of excellence in healthcare delivery (Kosel, Gelinas, & Paxson, 2007). Performance measurement can then be used to form an improvement plan, evaluate the success of the results, and, in the end, allow patients and payors to select and financially reward health programs with superior performance measures (Melichar, 2007).

To allow for accurate comparison of performance across units, organizations, and time, data should be recorded, collected, and interpreted in a uniform way. As shown by the experience of Medicare, performance measurement does not typically phase in until after a critical mass of data has been accumulated. Pursuant to the Medicare Prescription Drug Improvement and Modernization Act of 2003, Medicare instituted the Reporting Hospital Quality Data for Annual Payment Update (RHQDAPU) Program that paid hospitals within the Inpatient Prospective Payment System an additional 0.4% of payments to induce them to report on 10 standardized quality indicators (Centers for Medicare & Medicaid Services, 2007d). Four years later, in November 2007, Medicare used the authority under the Deficit Reduction Act of 2005 to propose a three-year transition period from RHQDAPU to the Hospital Value-based Purchasing (VBP) Program (2007d). Under this proposal, which remains under review, Medicare will shift from paying for reporting, i.e., rewarding hospitals that provide quality data, to paying for performance, i.e., rewarding hospitals that provide quality care, as measured by high scores computed with those data.

The Role of Registered Nurses in Quality Measurement

By virtue of their impact as well as training, registered nurses play a pivotal role in improving the healthcare delivery of hospitals. In 2003, U.S. hospitals employed 2.4 million registered nurses, representing their largest professional group; the number of registered nurses, moreover, is anticipated to go over 3 million by 2012, representing the largest job growth for any profession in the United States (U.S. Census, 2005). Because they monitor patients most closely, registered nurses establish a strong rapport with patients and their families, and effectively communicate and coordinate medical care among different caregivers. Given their significant responsibility for the delivery of patient care in hospitals, quantitative measurements of the quality of hospital healthcare must capture the contributions of registered nurses (Riehle, Hanold, Sprenger, & Loeb, 2007). At the same time, registered nurses are well-equipped to record and assess performance measurement data. The training they receive in abstracting charts and reviewing medical records prepare them very well for entering detailed patient-level data for quality measurement (Kosel, Gelinas, & Paxson, 2007). Also, registered nurses can readily apply the methodology of evidence-based nursing practice to performance measurement. Individually or in collaboration, they attack a performance issue by specifying its parameters, collecting accurate data, applying state-of-the-art knowledge, devising and

implementing an improvement plan, and using clinical evidence to evaluate the effectiveness of the plan.

Furthermore, professional nursing organizations have been at the forefront of healthcare quality measurement since 1985. The American Nurses Association and California Nursing Outcomes Coalition (CalNOC) have developed and disseminated standards and guidelines for assessing quality in the primary care setting (Needleman, Kurtzman, & Kizer, 2007). The American Academy of Ambulatory Care Nursing has initiated similar efforts (Mackey & McNiel, 2002). Their efforts have been supplemented by a number of high-profile research initiatives on the quality of nursing care. In February, 2003, the National Quality Forum (NQF) published the widely-adopted "NQF15" standards that measure the quality of care provided by nurses in United States hospitals (Melichar, 2007). The Robert Wood Johnson Foundation initiated a major national research program in October, 2005, culminating in the award in 2007 of up to $2.7 million in research grants to nine interdisciplinary research teams for research, education, and practice that improve the quality of nursing care in hospitals (Melichar, 2007).

Challenges and Opportunities

Despite their significant contribution to patient care, nurses lack influence in the public debate over the quality of healthcare and are underrepresented among the policymakers of hospitals and other health care organizations (Melichar, 2007). As a result, health care administrators have long overlooked nursing's link to quality, leading to cuts to nurse staffing in hospitals and poor utilization of nursing staff (Melichar, 2007). By supporting the proper allocation of resources to nursing, the development of nursing-sensitive quality indicators and measurement methodology is a win-win proposition for the nursing profession and patients (Needleman, Kurtzman, & Kizer, 2007). Improvement in working conditions will improve professional satisfaction and retention of registered nurses (Lake, 2007). Improved involvement by registered nurses will lead to improved patient outcomes (Aiken, Clarke, Sloane, Sochalski, & Silber, 2002). The development of these indicators and methodology will expand the role of nurses as policy advocates at the institutional as well as public level. Using nursing research to develop nursing-sensitive quality indicators and measurement methodology will further validate nursing as a science and a leader in innovation (Melichar, 2007; Lake, 2007).

Paradoxically, measuring the contribution by registered nurses to the quality of healthcare delivery in hospitals is complicated by the comprehensiveness of nursing responsibilities. Defining "nursing quality" involves qualifying the concept of quality by the nature of nursing practice (Riehle, Hanold, Sprenger, & Loeb, 2007). Care should be taken to include not only description of the many tasks of registered nurses, but also the relationship of these tasks (Lang & Clinton, 1983). Registered nurses are an integral part of the complex process of hospital care; a significant portion of their responsibilities, such as care coordination, medication management, and pain management, is simply not conducive to measurement. Kosel, Gelinas, & Paxson (2007) make the observation that, unlike the use of drugs, whose effect can be directly demonstrated, it is much more difficult to establish the causal chain of how the structure and process of nursing care contribute to improved patient health outcomes. Fortunately, there is a growing body of research that reflects the positive effects of nursing care, and suggests ways to establish the validity and reliability of nursing-sensitive measurements (Bolton, Donaldson, Rutledge, Bennett, & Brown, 2007; Naylor, 2007).

The effort to obtain nursing-sensitive measurements is also hampered by the fact that many hospitals cannot afford to dedicate resources to the recording and managing of quality-related data. Kosel, Gelinas, & Paxson (2007) estimate that only 20% of United States hospitals have the resources and commitment to perform full quality measurements, and that as much as 20% of them lack the resources and commitment to do any. These hospitals will be incentivized to submit data by the "pay-for-reporting" RHQDAPU and the "pay-for-performance" VBP and by payments from certain national interest groups such as the Joint Commission on Accreditation of Healthcare Organizations (Alexander, 2007). Additional information can be obtained from nursing-sensitive databases, such as the National Database of

Nursing Quality Indicators (NDNQI) established by the National Center for Nursing Quality Indicators (NCNQ) and the California Nursing Outcomes Coalition (CalNOC) Database Project (Alexander, 2007). NDNQI indicators include nursing hours per patient day, staff mix, and voluntary turnover, while the CalNOC indicators include patient experience with pain management and patient education. The Veterans Administration likewise has set up a Veterans Affairs Nursing Outcomes Database (Needleman, Kurtzman, & Kizer, 2007).

Conclusions and Recommendations

The traditional data for quality healthcare measurements consist of computerized billing information and abstracts from patients medical records (Alexander, 2007). They cannot measure how registered nurses in a hospital fulfill their mandate to provide holistic care by making their patients' stay a pleasant and healing experience, rather than a disorienting and degrading ordeal. Nursing-sensitive quality indicators and measurement methodology, therefore, must also incorporate data, such as patient satisfaction interviews and questionnaires, that measure the patients' perception of the quality of care they have received, and the extent their goals and expectations have been met. This patient-based data, however, must be capable of being tested in a conceptually sound manner.

In order to measure, improve, and reward nursing quality, these measures have to be detailed, standardized and uniformly implemented all through the United States. In light of the estimation by Kosel, Gelinas, & Paxson (2007) that as much as 20% of U.S. hospitals lack the resources and commitment to perform any quality measurements, it is prudent to divide the data into two categories: basic and enhanced. For example, basic data may consist of the customary billing information and patient medical records, while enhanced data utilize nursing-sensitive quality indicators. Hospitals that submit enhanced data will be rewarded, but those that submit basic data will not be penalized.

To ensure widespread acceptance, these standards should be formulated with the input of all the major stakeholders in the healthcare process – patients, insurance companies, healthcare organizations, health professionals, and researchers (Rantz, 1995). Since acceptance by the research community is contingent on its confidence in the science on which the conceptual framework is based, it is helpful to collaborate with scholars from other disciplines to determine if their time-tested paradigms are transferable to nursing. While an interdisciplinary approach may initially create difficulty in achieving consensus, the use of an evidence-based approach will prevent researchers from using their personal experience or disciplinary bias to override evidence. Nursing school programs and nursing research projects should also emphasize nursing sensitive measurements.

To convince healthcare administrators to make the effort to collect nursing-sensitive data, the measures should not be onerous to collect and report. For the stakeholders to willingly utilize the nursing-sensitive data, they should be equally useful to patients and payors. They have to be presented in a concise and jargon-free format that can be easily interpreted by those with the power to allocate resources to nursing. Furthermore, a tracking system for information relating to nursing-sensitive measurements can create a climate that fosters growth and improvement by facilitating the communication of successes and challenges experienced by developers, users and decision makers.

Through the well-accepted use of pilot studies, the nursing model of research, education, and practice can be applied to explore the optimal way to develop nursing-sensitive quality indicators and measurement methodology. Using these pilot studies as real-world laboratories, nursing researchers can collaborate and coordinate with other stakeholders, such as government agencies and hospital administrators, to test and refine new approaches to measuring nursing contribution to patient health outcomes (some of which may be adapted from other disciplines) that will then be assessed thoroughly in other settings to determine their applicability on a wider scale (Kosel, Gelinas, & Paxson, 2007). When parties with different perspectives work hand in hand to gain consensus, everyone is sensitized to the need for quality improvement and the various techniques available to achieve them. By leveraging the resources of academia, government, and hospitals, everyone can share in improvements that none of

them could achieve on its own.

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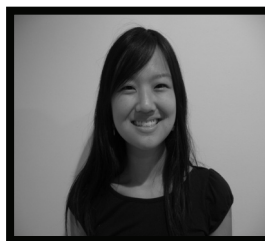
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