



Moving Healthcare Quality Forward: Nurse Sensitive Measures and Value Purchasing

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Review

Moving Healthcare Quality Forward: Nurse Sensitive Measures and Value Purchasing

Abstract

Nurse Sensitive Value Purchasing (NSVP) is the application of incentives which help to promote optimal staffing and practice environment through financial rewards for patient outcomes, processes and environmental measures which are highly dependent upon the nurse. Multiple studies have shown that adverse patient events and mortality are highly dependent upon the nurse staffing and skill mix. Although advantageous to society, economic studies have not consistently shown that the promotion of better patient outcomes by increasing nursing staff is a financial advantage to the institution. Over 50% of a hospital's operating budget is staff salaries and nursing comprises the majority of these salaries. A possible, but shortsighted, way of addressing hospital budgetary shortfalls is to decrease hospital nursing staff, resulting in decrease contact hours of nursing per patient. A hospital understaffing is projected to worsen from factors on both the supply and demand side. NSVP realigns hospital incentives where the economic benefit of increasing nursing staff is greater to the patient than to the hospital. NSVP financially motivates hospitals to have an optimal nurse practice environment capable of producing optimal patient results and reversing understaffing of nurses in hospitals.

Manuscript

Introduction: Despite being the highest health care spender in the world, the United States continues to score poorly in the quality of the provided healthcare as compared to other industrialized countries. Medicare has turned to value-based purchasing as one of the major initiatives to correct this discrepancy. Instead of only paying health care providers and facilities for the amount of care provided, payment will also be based on the quality of care. Nurse Sensitive Value Purchasing (NSVP) has been proposed as an initiative that would reward healthcare institutions with high scores in selected nursing indicators which promote quality, and penalize those institutions with low scores.

The Centers for Medicare and Medicaid (CMS) is progressively expanding and experimenting with its value purchasing initiative and will be using selective NSVP indicators such as death in surgical patients with

In the future, a facility's fee scheduled may be increased or decreased by 1 to 3 percent depending upon their performance on quality measures.

This article will underscore the need for health system reform and how nursing is a key component in our healthcare system. Institutional factors, which inhibit the provision of effective nursing care, underscore the need for NSVP. Current and future strategies of NSVP along with the societal benefits of its implementation will be discussed.

The Need for Healthcare System Reform: The current health care system in the United States continues to sharply rise in dollars costs and to score low compared to other industrialized countries on measures of preventable mortality by medical care, number of uninsured, and low health care system efficiency scores. Healthcare spending is predicted to comprise 20% of the U.S. Gross National Product by 2019 (Alonso-Zaldivar, 2010). The United States also pays far more per capita than any other nation, spending 81% more for healthcare than the average Organisation for Economic Co-operative Development nation (OECD, 2010b). A major component of the U.S. Healthcare system is hospital care, representing just over 30% of the U.S. healthcare budget (Kaiser Family Foundation, 2010). Despite its size, significant issues exist with both the cost and quality of our inpatient healthcare delivery system.

The United States has a below average life expectancy for nations belonging to the OECD (Organisation for Economic Co-operative Development [OECD] ,2010a). One of the first major studies to document the magnitude of quality issues in U. S. hospitals was the 1999 report from the Institute of Medicine which estimated that almost 100,000 patients die each year from medical errors (Kohn, Corrigan, & Donaldson, 2000). This finding was confirmed by HealthGrades which reported between the years 2000 to 2002 that 263,000 patient deaths in hospitals were potentially attributable to patient safety incidents (HealthGrades, 2004).

Little has changed over the past decade. A 2010 report from the Office of Inspector General found that approximately one in seven hospitalized Medicare patients suffered an adverse event, which caused harm (Levinson, 2010). This study was confirmed a week later by a separate report in *The New England Journal of Medicine* that identified 25.1 patient harms per 100 admissions (Landrigan et al., 2010). These studies reported that 44% (Levinson, 2010) to 66% (Landrigan et al., 2010) of the adverse events were preventable. The Office of Inspector General has reported that only 14% of events that cause harm are captured and thus not reported internally to

hospital administration (OIG, 2012). The magnitude, severity, and cost of health care errors continue to be an unacceptable care outcome.

In Addition, healthcare-associated infections (HAI) continues to be a huge problem in the United States. The Centers for Disease Control and Prevention (CDC) reports that healthcare-associated Infections in hospitals afflict 1.7 million patients each year; approximately 1 in 20 hospitalized patients (Centers for Disease Control and Prevention, 2010a). Healthcare-associated infections in hospitals cost the US healthcare system between 35.7 to 45.0 billion dollars each year (Scott, 2009a), let alone the nearly 100,000 lives (Klevins, et al., 2007) and untold disability. The health care system continues to face many challenges as soaring costs, low efficiency scores, and low quality of care as evident by slow progress in reducing adverse events and infections.

Importance of Nursing in the Healthcare System: Nurses are “the largest direct provider of care impacting patient outcome” (Montalvo, 2008, p.3). One important observation is that research findings on the importance of nursing are still being published in prestigious journals almost a decade after the publication of the landmark work by Aiken, Clarke, Sloane, Sochalski, and Silber (2002) on the critical role the nurses play in the provision of quality patient care. Aiken, et al. (2002) found that each additional patient a nurse cared for resulted in a 7% increase in the likelihood of patients dying. This study of general, orthopedic, and vascular surgery patients found that increasing nursing patient loads, from one nurse for every four patients to one nurse for every eight patients, increased the risk of death by 31%. Similarly, Needleman, Buerhaus, Mattke, Stewart, and Zelevinsky (2002) reported that increased registered nurse staffing resulted in lower rates of urinary tract infections, upper gastrointestinal bleeding, pneumonia, shock, cardiac arrest and failure-to-rescue. Dunton, Gajewski, Taunton, and Moore (2004) and Patrician, et al. (2011) reported on the importance of registered nurse staffing in the prevention of falls. Kovner, Jones, Zhan, Gergen, and Basu (2002) have reported lower post-operative pneumonia with increase in registered nurse staffing. It has also been reported that 70% of central line associated bloodstream infections occur after five days of insertion, during the maintenance, not the insertion phase (Pennsylvania Patient Safety Advisory, 2011). Seago (2001) reported that there is a strong association between a reduced nursing staff and “increased length of stay, nosocomial infection (urinary tract infection, postoperative infection, and pneumonia), and pressure ulcers.” The importance of nursing in the prevention of pressure ulcers cannot be understated. Prevention is not simply turning the patient. It is a complex task, involving a daily risk assessment, proper nutrition, pressure redistribution, moisture management, along with being sure the patient is not over medicated and sedated. The Joint Commission

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has identified staffing levels as a factor in nearly 24% of sentinel events (Joint Commission, 2002, p. 6). Only 66% of nurses reported their units were adequately staffed with registered nurses and that, “care is literally being left undone” (Joint Commission, 2002, p. 11).

The Need for NSVP – The Poor Work Practice Environment: Research has shown that adequate nurse staffing levels lead to increase staff retention, satisfaction, productivity, and better outcomes. A major issue is not the number of nurses in the job market but the number of hired and retained nurses. The supply of registered nurses is greater than those who desire to work in hospitals. Management decisions may create an undesirable practice environment. Nurses that just enter the workforce also report not being treated with respect as a professional, requiring working speeds similar to a seasoned RN, too high of patient-to-nurse workloads and too many demands being placed on them (Pellicle, Brewer, & Kovner, 2009; Kover, Brewer, 2011). In addition, the nurse may be subjected to undesirable working hours and mandatory overtime that are not compatible with the provision of safe patient care (American Association of Critical-Care Nurses, 2003), let alone raising a family and having a life outside of the facility.

As early as 2002, Aiken et al. (2002), reported that increasing staffing levels from four patients per nurse to eight was associated with a 75% increase in the likelihood of job dissatisfaction and that 42% of nurses that were dissatisfied with their jobs intended to leave within 12 months, compared to 11% for nurses who had high job satisfaction. The American Nurses Association (ANA) conducted a survey which found that 72.5% of nurses felt their hospital unit had inadequate staffing and over half of the nurses were considering leaving their position with the majority of respondents citing inadequate staffing as a factor in their decision (ANA, 2009; ANA, 2010). In 2009, a Robert Wood Johnson Foundation study evaluated comments from 612 newly licensed registered nurses, 80% of whom were employed in an inpatient setting. They found that 18.1% of these nurses left their first job within one year and 26.2% left within two years of employment (Robert Wood Johnson Foundation, 2009; Pellicle, 2009). In reference to the United States’ nursing workforce the OECD has stated:

“Retention of nurses in the workforce is critical and will require substantial improvements in human resource policies, the development of satisfying professional work environments, and technological innovations to ease the physical burdens of care giving.”(OECD, 2008, p. 4)

The Need for NSVP – Facility Cost Containment Strategies: Reduced nurse staffing levels in hospitals may also

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10 ranges from 50% to 70% of a facility's operating budget (Schuhmann, 2008; Barnes, 2010; Jones, 2010). On
11 average, nursing salaries comprise more than half of the labor costs (Barnes, 2010). However, in some facilities
12 nursing salaries account for almost 50% of the total operating budget of a hospital (Manojlovich, 2009). As early as
13 1986, some hospital administrators believed that the single and most effective way to decrease a hospital's operating
14 budget was by cutting nursing staff (Kirkpatrick, 1986, p. 4). This view is still held today with some hospitals
15 resorting to layoffs which increase the patient-to-nurse ratio, to reduce operating budgets (Jones, 2010, Manojlovich,
16 2009). Hospital costs can also be lowered by reductions in the skill mix of the facility's nursing staff. However, as
17 stated by ANA President Karen A. Daley, PhD, MPH, RN, FAAN, "... nurse staffing should not be viewed as a cost
18 to be minimized, but as a critical factor in producing quality patient outcomes — ultimately saving lives." (ANA,
19 2011c).

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31 **Implementation Strategies for Nurse Sensitive Value Purchasing (NSVP):** Nurse Sensitive Quality Indicators
32 need to be a major component of the value purchasing initiative and are defined by the ANA as reflecting "the
33 structure, process and outcomes of nursing care. The structure of nursing care is indicated by the supply of nursing
34 staff, the skill level of the nursing staff, and the education/certification of nursing staff" (American Nurses
35 Association [ANA], 2011a).

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41 The National Database of Nursing Quality Indicators (NDNQI) has been developed by the ANA for
42 collection and evaluation of nurse sensitive data which is used in the evaluation of a facilities nursing program's
43 performance in relationship to patient outcomes (ANA, 2011b). The NDNQI Indicators have been extensively
44 studied along with development and testing of metrics (Montalvo, 2008).

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49 The NDNQI along with other well-developed indicators can be used as nurse sensitive measurements for
50 value purchasing initiatives. The concept of nurse sensitive measurements is so important that the Agency for
51 Healthcare Research and Quality (AHRQ) is in the process of grouping nurse sensitive measurements together for
52 easy identification and comparison in their MONARCH software product. MONARCH is designed to automate the
53 production of healthcare quality comparative websites (National Advisory Council: Meeting Summary, July 2011).

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There are two types of value purchasing incentives: Transparency and Financial. Transparency of
measures is important to allow consumers and referrers to make choices between different hospitals based upon
quality and performance. At least 27 states, including the District of Columbia, publicly report healthcare-

associated infections (Frieden, 2010). Data on hospital-acquired conditions (HACs), mortality, process measures

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and patient surveys are available to the public on the Hospital Compare website. Examples include: If patients who may have had a heart attack receive care to prevent blood clots within 90 minutes; if care was provided within a 24-hour window to surgery patients; if discharge instructions were communicated to heart failure patients; if patients are satisfied with their experience at a hospital; and if a hospital's facilities are clean and well maintained (U.S. Department of Health & Human Services, 2012). Public reporting of quality measures could become a factor in a facility's negotiation of insurance contracts with employer purchasing alliances and third-party payers. In addition, it could affect physician referrals and advice to patients regarding a facility.

The second type of incentives are financial. These incentives include the nonpayment for hospital-acquired conditions and the penalizing of the entire payment schedule for lower performing facilities along with rewarding the payment schedule for the higher performing hospitals. The latter type of incentive is soon to be enacted regarding facility quality scores and patient readmissions rates during the first 30 days after hospital discharge.

Three types of measures can be used in NSVP. They are process measures, nurse practice environment measures, and outcome measures. Process measures are often used by a facility to monitor its healthcare delivery system. However, they are of debated value in Value Purchasing, since a facility can teach to the test. A facility's staff can be shifted to do one process as opposed to another and thus, have no effect on the overall quality of the service provided. For example, the CDC has over 500 highly recommended practices for the prevention of hospital infections (U. S. Government Accountability Office, 2008). Measuring and reporting of all of these would be impractical. It also has been observed that improvement in process measures is not necessarily related to better outcomes (Ingraham, et al., 2010). However, infection rates, which are outcome measurements, are dependent upon multiple processes. A chain of successfully executed events must take place in order for good patient outcomes. Looking at individual links in the chain may not predict the outcome, since like a chain; the patient's treatment is as successful as the weakest link.

Despite the above shortcomings, examples of valuable process measures can be found, such as the National Quality Forum (NQF) endorsed nurse sensitive process measure of Urinary Catheter Removal (NQF Measure 453).

This is an important measure since one of the most important factors in the development of urinary tract infections is the length of time the urinary catheter is left in place (Fakih et al., 2008).

The second set of measures are reflective of the Nurse Practice Environment. The Joint Commission has developed an extensive implementation guide for these measures (Joint Commission, 2009). Examples of these measures are shown in Table 1.

Nurse retention or “Voluntary Turnover Rates” is a NQF endorsed measure and mandated to be reported in the State of Illinois (Illinois Department of Public Health, 2010). An example of voluntary reporting is Norton Healthcare which reports this measure on their website (see Figure 1). Nurse retention rates should not need acuity adjustment, since a facility’s staffing is dependent upon the acuity of the treated patients. They are a direct reflection of nurse job satisfaction and correlate with staffing levels. It would also be expected that a high staff turnover would be predictive of poorer patient outcomes. Expenses to the hospital caused by nursing turnover are significant and accounted for greater than 5% of the operating budget in one academic medical center in the Southwest (Waldman, Kelly, Arora, & Smith, 2004). Few patients would want to be treated in a facility where the nurses are unhappy and leaving. Nurses’ retention rates or voluntary turnover rates are a nurse sensitive indicator that would be of great benefit and addition to the current value purchasing initiative.

Research studies on “Skill Mix” also indicate that a nurse’s educational level, training, and experience play a role in hospital quality and efficiency. Skill Mix is an endorsed NQF measure and a NDNQI indicator. Needleman, et al. (2002) observed significant reduction in morbidity with increases in registered nursing levels, these findings did not hold true for increasing staffing levels of licensed practical nurses or nurses’ aides. Thungiaroenkul, Cummings, and Embleton (2007) also found that an increase in registered nurse staffing levels was associated with a significant reduction in length of stay and patient costs, “as RNs have higher knowledge and skill levels to provide more effective nursing care as well as reduce patient resource consumption”(Thungjaroenkul, et al., 2007). Cost savings to the patient are inevitable with shortened hospitalizations and decrease complications. Needleman, et al. (2011) published a well-controlled study in *The New England Journal of Medicine* demonstrating that reduced registered nurse staffing was associated with an increase in overall patient mortality. Recently, Patrician, et al. (2011) found that an increase in RN skill mix, total nursing care hours, and nursing experience was associated with a lower incidence of adverse events. Researchers have also observed that with a 10% increase in baccalaureate nurses (BSN) and certified BSN proportion resulted in a decrease of mortality by 6% and 2%, respectively, and they observed identical findings for failure-to-rescue (Kendall-Gallagher, Aiken, Sloane, &

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increase in BSN prepared nurses. Nursing “Skill Mix” is a quality of care indicator that would be an important measure in the value purchasing initiatives.

The Practice Environment Scale is a metric which surveys registered nurses regarding characteristics of their practice environment. It is a NQF endorsed measure and a NDNQI Indicator. Aiken et al. (2011) found that the positive effect of decreasing nurse workloads on mortality and failure-to-rescue was not observed in facilities with poor practice environments, but these outcomes markedly improved in facilities with good practice environments.

Nurse staffing is typically measured as a full-time equivalents (FTE’s) nursing hours per patient per day or nurse to patient ratio. Clinicians use different techniques to calculate staffing levels in order to compare hospitals and different units that have many differences in their patient acuity, nurses’ experience, and many other organizational factors, examples of the many nurse staffing measures are; Case Mix Index (CMI), CMI-adjusted staffing measure, Nursing Intensity Weights (NIWs), NIWs-adjusted staffing measure, adjusted patient-days, and other institutional customized statistical methods. The State of California was the first to introduce minimum staffing requirements. Many researchers found that the minimum staffing requirement in California has been effective in preventing adverse events and improving positive patient outcomes (Aiken et al., 2010a; Aiken, 2010b; Donaldson & Shapiro, 2010). However, with fixed ratios, nurses may be expected to perform non-nursing tasks and the functions of ancillary employees (Stanton, 2004).

The metrics for “Hours of Nursing Care per Patient Day” has been developed by the National Quality Forum for nursing homes and acute care facilities (NQF Reference Number 190 and 203). If a hospital uses acuity-based staffing then it should be able to acuity-adjust the staffing levels. The number of productive nursing hours per patient day is also a NDNQI Indicator as developed by the ANA. Further development of the metrics and evaluation of this indicator should be an area of future research. Similarly, the metrics for Nursing Hours Supplied by Temporary Staff is a NDNQI Indicator (ANA, 2011b). These metrics should be refined and evaluated for use in hospital Value Based Purchasing.

The third NSVP set of measures are patient outcomes. These measures have a direct effect on patient care and in order to have low rates of these adverse events, a facility must provide an appropriate level of nursing care.

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10 optimal outcome. Many of these outcome measures are already being used by CMS in current and future Value
11 Purchasing Initiatives (see Table 2). These initiatives include the non-payment for care related to adverse events
12 and the future rewarding and penalizing of the facilities reimbursement fee schedule based upon performance on
13 quality measurements.
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19 Table 2 lists examples of nurse sensitive outcome measures and estimates the cost for these adverse events.
20 All of these measures have either metrics developed by the NQF (National Quality Forum, 2011), are a NDNQI
21 indicator, or are currently being used or scheduled to be used for Value Based Purchasing (VBP) by CMS (Centers
22 for Medicare and Medicaid Services [CMS], 2008).
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28 **Financial Impact to the Facility and Payer of Increasing Nursing Staff to Improve Healthcare Quality:** The
29 preponderance of financial studies has found a negative impact or financial disincentive on hospitals that increase
30 nursing staff in order to lower adverse events or readmissions. The value in lowering of healthcare costs to the
31 payer needs to be distinguished from financial savings to hospitals. Costs often refer to the financial impact on the
32 payer or patient (Dall, Chen, Seifert, Maddox, & Hogan, 2009). For example, avoidance of a readmission may save
33 the patient and third-party payer money, but it may also cost the hospital income under current reimbursement
34 systems.
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43 Increasing non-overtime staffing of registered nurses by just 45 minutes per patient day in 16 nursing units
44 was observed to decrease hospital readmissions and provided a yearly net healthcare savings (to the payer) of 11.64
45 million dollars (Weiss, Yakusheava, & Bobay, 2011). The same has been observed to be true regarding prevention
46 of adverse events. Rothchild, Bates, Franz, Soukup, and Kaushal (2009) calculated the annual reduction in hospital
47 resources utilized (including both actual variable and fixed hospital costs) of nurse intercepted and prevented events
48 in coronary care units to be between \$2.2 and \$13.2 million, compared to the nurse staffing cost of \$1.36 million. It
49 should be noted that a facility can save on the variable costs by decreasing adverse events, but not on fixed costs,
50 which are unaffected by production.
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59 Dall, et al., (2009) performed a system-wide analysis of financial data on the effect of nursing staffing on
60 hospital and third-party payer healthcare costs. They concluded that if all hospitals staffed to at least the 75th
percentile, there would be a 3.6 million national annual decrease in hospital days and third-party payer healthcare
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Zelevinsky, and Matke (2006) came to similar conclusions and found that an increase in registered nurse staffing, resulting in an increase in nursing staff total hours, resulted in a decrease in adverse events but a net increase in hospital costs of 1.5% (Needleman et al., 2006). They concluded that the cost effectiveness depends upon the value that society places on avoidance of disability and loss of life.

Benefit of Nurse Sensitive Value Purchasing: Tipping the scales such that it becomes financially advantageous for hospitals to increase nursing staff and lower adverse events is the intent behind the policy of NSVP. NSVP needs to be designed and incentivized to decrease adverse events, hospital stays and readmissions, and would be expected to produce a significant decrease in societal healthcare costs.

Many adverse outcomes can be dramatically improved in the hospital setting. For example: Ventilator associated pneumonia (VAP) and central line associated bloodstream infections (CLABSI) have a combined cost to the US Healthcare system of between 2.7 and 4.18 billion dollars (See Table 2). Studies have shown that these infections can be reduced by 70% and approach zero in many institutions (Berenholtz et al., 2004; Berenholtz et al., 2011). Similarly, it has been reported that methicillin resistant *Staphylococcus aureus* (MRSA) surgical site infections in cardiac surgery are virtually eliminated with the implementation of proper protocols (Walsh, Greene, & Kirshner, 2011).

Under Medicare's Diagnostic Related Group (DRG) payment system a single payment is given based upon the patient's DRG or diagnosis. Thus, it is to the facilities' financial advantage to have the patient leave the hospital sooner. Patient deaths as opposed to weeks of care given in the ICU may financially benefit an institution, as would discharging and rapidly readmitting a sick patient for the same or a related diagnosis. Thus, high rates of failure-to-rescue, patient mortality and readmissions may result in a cost savings to the institution but have disastrous results for the patient. It has also been reported that one in five Medicare discharges are rehospitalized within 30 days (Jencks, Williams, & Coleman, 2009). The Medicare Payment Advisory Committee (MedPAC) estimates that readmissions cost Medicare 15 billion dollars annually, of which \$12 billion is from potentially preventable readmissions (Medicare Payment Advisory Committee, 2009). CMS is set to reduce Medicare payments to hospitals with high readmission rates by 1% in 2013, 2% in 2014 and 3% in 2015 (Thomson, Reuters, 2010; Goodman, Fisher, Chang, 2011).

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10 The description of healthcare costs should be expanded to include not only the healthcare costs to the
11 payers and patients but also to society as a whole, including the patient's loss of employment, production, livelihood
12 and disability. In calculating cost effectiveness, Federal agencies estimate the value of a single life between 6.8 to
13 9.1 million dollars (Applebaum, 2011). Although data are available on savings to payers, there is little data
14 available on the financial impact of these other societal factors which are adversely affected by poor healthcare
15 quality. Further research could develop measures which reflect these costly and debilitating patient outcomes.
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22 **Future Policy Evaluation and Research:** Value purchasing is in its infancy and devising an effective system
23 which can transform our healthcare system can be viewed as a two step process. First, truly meaningful measures
24 must be identified. Ineffective process measures and unreliable outcome measures should not be used. There is
25 extensive data that support the position that nurse sensitive measures increases the quality of a facility's nursing
26 care, which will lead to a decrease in adverse outcomes and a savings in the societal healthcare dollar. The
27 improvement in the nurse sensitive outcome Measures, listed in Table 2, will certainly benefit the patient.
28 However, research into how the nurse practice environment changes, both through increases in workforce and
29 modification of delivery systems is needed. In addition, a facility-wide analysis would be beneficial to make sure
30 other areas of patient care are not sacrificed to augment the incentivized areas. The comparative effectiveness of the
31 various measures in the promotion of quality would also be an important study. It could be argued that nurse
32 sensitive practice environment measures may be the most effective since they are a facility wide measure and may
33 be the most resistant to gaming the system by teaching to the test.
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47 Second, these measures must be tied to an effective system of financial incentives. For example,
48 Medicare's financial incentive of non-payment of care related to hospital-acquired conditions has arguably not
49 produced the desired result. Due to facility billing complexities, during the first year of the program (ending in
50 September of 2009) the total nationwide cost savings for CMS's was only 18.8 million dollars (CMS, 2010b August
51 16). A small pittance when compared to the costs presented in Table 2. The Commonwealth Fund has reported that
52 this non-payment initiative has not produced significant policy changes in safety net hospitals with the majority of
53 financial officers stating the financial impact would be "minimal" or "insignificant" (McHugh, Van Dyke, Osei-
54 Anto, & Haque, 2011).
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In addition, a recent CBO report found that Medicare's coordinated care value purchasing initiative did not produce significant savings (Nelson, 2012). Little or no benefit was observed in pay-for-performance systems. A bypass surgery bundled payment initiative produced only a 10% decline in spending.

Future value purchasing strategies may be more affective. These initiatives include the reduction of overall payments to hospitals that have the highest rate of hospital-acquired conditions and readmissions, and to increase payments to those institutions that have the best performance. However, there is still disagreement as to which quality measures will be the most effective to promote quality and save costs.

Summary: As stated in the 2004 report from the Institute of Medicine (2004), "...how well we are cared for by nurses affects our health, and sometimes can be a matter of life or death" (p.2). To maintain and achieve quality healthcare, a hospital must have quality nursing. A short-term fix for facility budgetary shortfalls is to decrease nurse staffing costs. Reductions in nurse staffing reduces the quality of the healthcare delivery and may produce an increase in adverse medical events, along with an increase in patient mortality, length of stay and readmission rates.

The intent of NSVP is to financially incentivize a change in conditions wherever the economic benefit of increasing nursing staff to the purchaser or patient is greater than that to the hospital or provider. This would rebalance the financial equation in favor of improved patient care by financially rewarding hospitals that increase nursing staff and would lowers societal healthcare costs by producing better patient outcomes. Nurse Sensitive Value Purchasing also has the potential to help reverse hospital under staffing, to improve the quality of delivered healthcare, and to lower societal healthcare costs.

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Table 1:**Examples of Nurse Sensitive Measures – Practice Environment**

| Measure | NQF | NDNQI Endorsed Indicator |
|---|-----|--------------------------|
| Voluntary Turnover Rate (Nurse Retention) | 207 | x |
| RN, LPN and UNA Skill Mix | 204 | x |
| Practice Environment Scale | 206 | x |
| Nursing Hours Supplied By Temporary Staff | | x |
| Hours of Nursing Care Per Patient Day | 203 | x |

Note: NQF: National Quality Forum; NDNQI: National Database of Nursing Quality Indicators; () denote the NQF Measure Reference Number; RN: Registered Nurse; LPN: Licensed Practical/Vocational Nurse; UNA: Unlicensed Nursing Assistant.

Table 2:**Examples of Nurse Sensitive Outcome Measures and Estimated Annual Cost for Adverse Events in Hospitals**

| Outcome Measures | NQF Endorsed | NDNQI Indicator | CMS VBP | Annual Cost Adverse Events in Hospitals |
|--------------------------------|--------------|-----------------|---------|--|
| Infections | | | | |
| SSI | (130 & 299) | | x | \$ 3.45 -10.07 Billion (US Cost - Scott, 2009b) |
| VAP | (149) | x | | \$ 1.03-1.50 Billion (US Cost - Scott, 2009b) |
| CLABSI | (139) | x | x | \$ 0.67-2.68 Billion (US Cost - Scott, 2009b) |
| CAUTI | (138) | x | x | \$ 0.39-0.45 Billion (US Cost - Scott, 2009b) |
| Decubitus Ulcers Stage III & V | (337) | x | x | \$11.11 Billion (Medicare Cost, CMS 2008) |
| Falls & Falls with Injury | (141 & 202) | x | x | \$6.56 Billion (Medicare Cost including Burns, CMS 2008) |
| Failure-to-Rescue | (353) | x | | |
| Patient Mortality | (161 & 703) | | | |
| Length of Stay in ICU | (702) | | | |
| Readmissions | | | x | \$15 Billion (Medicare Cost, MedPAC, 2009) |

(VAP: Ventilator Associated Pneumonia; SSI: Surgical Site Infections, CLABSI: Central Line Bloodstream Infections; CAUTI: Catheter Associated Urinary Tract Infections; () denote the NQF Measure Reference Number; CMS: Centers for Medicare and Medicaid Services)

Figure 1 (For Online Publication Only):

Norton Healthcare System’s Public Reporting of Nursing Staff Outcome Measures

KEY

| | |
|--------------------------|--|
| Better than U.S. average | # = too few eligible cases to calculate a reliable statistic |
| Near U.S. average | <i>italics</i> = no comparative data |
| Worse than U.S. average | blank = does not apply |
| | *0* or +100* = best score possible |

Desired performance
 Norton Audubon Hospital
 Norton Brownsboro Hospital
 Norton Hospital
 Norton Suburban Hospital
 Kosair Children's Hospital
 Norton Healthcare
 Kentucky
 U.S.

| Nursing staff turnover - percent of nursing staff who choose to leave each year | | | | | | | | | |
|---|------|------|------|-------|-------|------|-------|--|--|
| RN | low | 4.65 | | 7.18 | 8.06 | 3.98 | 6.01 | | |
| LPN | low | *0* | | 20.83 | # | # | 12.31 | | |
| UAP | low | 8.77 | | 9.77 | 10.43 | 9.09 | 9.57 | | |
| RN survey - practice environment scale | | | | | | | | | |
| avg. nurse answer 1-4 survey, all questions | high | 2.92 | 3.03 | 2.88 | 2.90 | 2.97 | 2.92 | | |
| avg. nurse answer 1-4 survey, participation subscale | high | 2.94 | 3.01 | 2.86 | 2.84 | 2.94 | 2.89 | | |
| avg. nurse answer 1-4 survey, foundations subscale | high | 3.06 | 3.13 | 3.02 | 3.03 | 3.11 | 3.06 | | |
| avg. nurse answer 1-4 survey, leadership subscale | high | 2.96 | 3.23 | 2.86 | 2.94 | 2.95 | 2.93 | | |
| avg. nurse answer 1-4 survey, staffing subscale | high | 2.73 | 2.77 | 2.74 | 2.70 | 2.77 | 2.74 | | |
| avg. nurse answer 1-4 survey, MD collaboration subscale | high | 2.92 | 3.00 | 2.89 | 3.00 | 3.04 | 2.97 | | |
| Miscellaneous | | | | | | | | | |
| Is the hospital in a clinical database registry for nursing care? | high | yes | yes | yes | yes | yes | yes | | |

Review