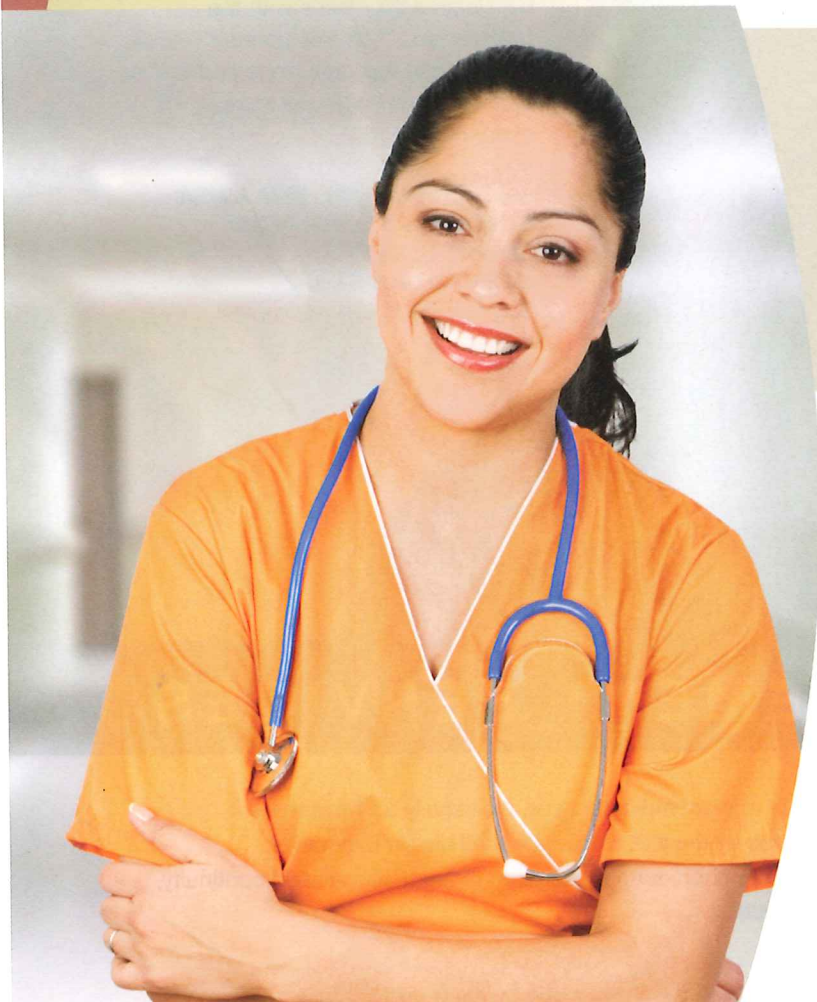


Evidence-Based Staffing: *The Next Step*

Sharon Eck Birmingham, DNSc, MA, BSN, RN



At the heart of value is nursing care. Nurses are at the point of care with the patient and family 24/7, and, with gratitude, nurses continue to be the most trusted professionals in the United States.¹ Essential elements to support nursing's role in creating healthcare value are improved staffing models based on evidence that it can provide better patient outcomes at reasonable costs and contribute to a satisfying professional workplace.

STAFFING MATTERS

Patients and their families, nurses, and physicians know it. Thanks to many dedicated scientists, there is strong evidence of the impact of nurse staffing on patient safety and quality.^{2,3} A large gap exists, however, between what science tells us about the

Healthcare reform is focused on two initiatives: reforming insurance coverage and reforming health care delivery to provide higher value—that is, delivering patient outcomes of high quality and safety at reasonable costs. As of this writing, Congress is addressing insurance coverage; the next step is addressing healthcare value.

impact of staffing on outcomes and the evidence to inform day-to-day and even hour-to-hour operations for nursing executives. A second gap exists between patient documentation systems and staffing systems.

On the national front, Anderson and Kerfoot have called for action toward evidence-based staffing.⁴ The next step toward evidence-based staffing includes links between the individual patient and individual nurse at the point of care. In a spirit to this national dialogue, this article explores examples of this link, including patient-centered aligning of systems; tracking patient progress to outcomes; transforming patient assignment; comparing patient outcomes, risk, and cost; considering outcomes-driven acuity for workload; and using real-time, actionable data.

PATIENT-CENTERED ALIGNMENT OF SYSTEMS

Caring for patients and families is what nurses do. Patients and family are central to most hospital mission statements and the scope of practice statements for all healthcare professionals. A national summit on evidence-based staffing held in March 2008 identified 10 best practices for healthcare organizations, the most important being a patient-centered organizational culture.⁵ The majority of patient information and nurse staffing and scheduling systems run parallel to one another but seldom interact. Thompson and Diers make this point best, saying, "The effective management of nursing resources requires a linkage between the cost of services and the patients who receive them."⁶

The next step in evidence-based staffing is electronically tracking each individual patient's condition across his or her episode of care and the individual and unlicensed assistive personnel caring for the patient. The alignment of patient and nurse staffing systems will further strengthen resource management and a patient-centered culture.

TRACKING PATIENT PROGRESS TO EXPECTED CLINICAL OUTCOMES AND LENGTH OF STAY

The first example of a necessary link between individual patients and nurses begins at patient entry into the hospital system, with the tracking of the patients' condition and progress, hour by hour, throughout their stay. Every patient's movement throughout the hospital must be individualized to expected clinical outcomes and an expected length of stay (LOS). The tracking for the patient may be tailored based on admission diagnosis, ICD9 (*International Classification of Diseases, 9th Revision*), DRG (diagnosis related group) (e.g., working DRG), or patient care unit as received from the existing electronic registration systems. Each patient's stay may be defined not only based on total LOS but, optimally, by anticipated level of nursing care (e.g., critical care, step down/intermediate, and acute/routine care), providing key interim points for measuring patient progress. If there is a significant variation to the patient's expected outcomes or LOS, an alert may be sent to the nurse and case manager for further assessment, intervention, physician communication, or interdisciplinary referrals.

If the Centers for Medicaid and Medicare Services' (CMS) pilots for bundled reimbursement for an episode of care, including 30 days post-hospitalization, is adopted as regulation, the patient and staffing resources may be similarly tracked to readmissions, physician visits, home care, ambulatory services such as physical therapy, and other services external to the acute care setting. LOS may be an important outcome that deserves attention in this scenario to analyze how it relates to the post-hospitalization period. With evidence regarding nurse staffing impact on LOS,^{7,8} nursing's impact on both LOS and posthospitalization utilization should be considered in the determination of staffing for the episode of acute care. A new methodology uses a measure of demand (need for nursing care) based on real-time patient outcomes rather than just census or care activities.⁹

TRANSFORMING THE PATIENT ASSIGNMENT

A second example of a necessary linkage between individual patient and nurses may be achieved through the automation of the nurse to patient assignments conducted by charge nurses in all health care settings. The real-time patient admission, discharge, and transfer (ADT) information exists in the hospital registration system. Various patient characteristics, such as admitting diagnosis, physician, gender, age, and isolation precautions, also reside in the registration system. The nurses and staff scheduled to work and their various characteristics, such as licensure, competencies, education, certifications, and compensation, may reside in the scheduling system. When the patient and nurse staffing systems come together in an automated patient assignment system, the charge nurse is supported with evidence to complement her expertise in the highly complex process of making patient assignments. In addition, the anticipated evidence that relates patient outcomes to nurse competency, as measured by educational level and certification, will add another layer of evidence that should be used in staffing decisions and in career planning for the individual nurse.

Given real time and accurate patient and staff information, the charge nurse may choose to "assign for continuity," lever-

aging electronic historical assignments to facilitate continuity of care between the nurse, the patient, and the family. Building structures that foster continuity of care is an essential element in a patient-centered culture that results in higher patient and family satisfaction.

Providing charge nurses access to real-time objective information regarding patient condition, the nursing staff characteristics, and care hours available, the right nurse may be assigned to the right patient for an equitable distribution of care hours and fairness in workload. Nurses expect fair and balanced patient assignments; this increases nurse satisfaction in their daily work. There is little evidence regarding patient assignments, but one recent Transforming Care at the Bedside (TCAB) project led by Donahue validated the importance of geographic proximity in the assignment of patients to promote nurse efficiency, yet some flexibility to balance the workload.¹⁰ The patients, staff care hours, and staff characteristics may be analyzed for equitable access to nursing care across a clinical division, a facility, or large healthcare system.

Through the automation of patient assignment, the actual nursing care and costs associated with an individual patient are readily available by shift or for an episode of care. The cost of nurse staffing is only one component of costs for acute care, however, and less emphasis should be placed on the cost of a nurse and more emphasis placed on the cost of the acute episode of care.¹¹ Understanding the staffing implications and the cost impact of hospital-acquired conditions and individual nurse performance is essential to produce the value required in today's healthcare environment. The evidence generated through these methods and through electronically storing staffing assignments from each shift provides a wealth of information to meet the revised 2010 Joint Commission Staffing Effectiveness Standard.¹² Welton has validated the use of nurse assignment data in research and articulates the significance of this new level of analysis to examine the effect of nurse staffing on clinical quality and cost.¹³

LEVERAGING ELECTRONIC MEDICAL RECORD DATA FOR PATIENT OUTCOMES, RISK, AND COST

Existing electronic medical record (EMR) documentation tells the patient's clinical story. Intuitively, managers' access to this accurate and current patient data is important for staffing decisions but, as is, lacks valid translation to patient acuity and ultimately nursing workload. Nurses are documenting observations, interventions, and outcomes to multiple patient problems and, at the same time, critically thinking how they can facilitate the patient transition from a current to a desired state of clinical outcomes. Pesut describes this model of clinical reasoning as a shift in thinking from "the problem" to the desired clinical state in terms of specified outcomes, and the nursing actions, decisions, or interventions needed to achieve those outcomes.¹⁴ This model of clinical reasoning meets the demand of contemporary nursing practice and provides an explicit direction for nursing action and thinking beyond the present to the patient's future.

Existing clinical documentation may be translated into valid and reliable patient outcomes evidence. Goode and Krugman make a compelling point that, "Nurses want to

base clinical and managerial decisions on the best currently available evidence to improve outcomes.”¹⁵ Patient-specific data may be mapped to clinical outcomes reflecting the variability in outcomes achievement on a Likert scale (e.g. 1–5). The patient outcomes may be drawn from any outcomes source, taxonomy, or evidence-based outcomes sensitive to nursing interventions. The progress, or lack thereof, toward the expected patient outcomes becomes immediately visible for the nurse and the care team. The embedded evidence in clinical documentation may be leveraged to measure and make visible the value of nursing care to patient outcomes.

From research that combined actual patient-level direct costs of care with quality and safety outcomes, important findings begin to move us from the current model of thinking of the patient problem to a desired clinical state. In this study, patient age and severity increased the odds of an adverse event. Severity was measured through risk measures currently documented in the EMR. This information about patient risk should be used in making staffing decisions. In addition, for two of the nurse-sensitive outcomes that are part of the pay for performance reimbursement strategies, the EMR holds patient risk for falls and risk for pressure ulcers.

How are we using this risk data to make staffing decisions? One additional finding demonstrated that for each hour increase in RN staffing, the odds of a patient acquiring post-operative pneumonia decreased. Each time the adverse event of pneumonia is prevented, \$1,600 in costs are also avoided.¹⁶ The use of evidence will bring us closer to the goals of health care reform by adding both quality and cost improvements that yield value to the consumer.

LEVERAGING EMBEDDED DOCUMENTATION FOR OUTCOMES-DRIVEN ACUITY AND WORKLOAD

An innovative acuity methodology is designed to precisely calculate workload for care hours and skill mix based on population-specific outcomes. The methodology takes routine documentation of patient observations, interventions, and lab values and translates it into a Likert rating (1–5) for a particular outcome (e.g., respiratory status). The outcomes are summed and generate a total score that is aligned to an acuity level. Each acuity level for the nursing unit is associated with the direct registered nurse (RN) and unlicensed assistive personnel (UAP) care hours required for patient progress toward meeting the next expected clinical outcome. As additional observations or interventions are documented, the patient’s acuity level and the associated workload is automatically updated. The sum of the target workload generates the specific hours per patient day (HPPD).

Another element in calculating clinical workload required for patients are accurate and complete clinical assessments and safe and effective nurse-to-nurse hand-offs for ADT. In an effort to present alternatives to mandated nurse staffing ratios, Buerhaus suggests implementing systems that better support nursing operations when patient turnover or ADT is exceptionally high.¹⁷ ADT events are easily and automatically captured in patient registration applications. Given the assumption that workload associated with ADT is included in

the hours per patient day (HPPD), it may be subtracted from the HPPD and redistributed to the precise time of the ADT event. As an example, if 60 minutes is determined as the time associated with an admission and a discharge (e.g., 45 min RN, 15 min UAP) for a patient with a 3-day LOS, this calculates to 40 minutes per day. If the 40 minutes per day is subtracted from the budgeted daily HPPD and added as 60 minutes each at admission and discharge, the HPPD remains budget neutral but provides a more precise accounting of this time at the point of care.

Accounting for the workload associated with ADT at the point of care is important to reducing personnel expenses, particularly overtime and for future budgeting, since these data are not captured in a midnight census. The precise data allow for trending analysis by month, day of week, and time of day to inform scheduling practices and explore creative staffing strategies for high patient-turnover time periods. A similar process may be applied when a patient requires RN monitoring off the clinical unit for a dedicated period or when a procedure typically conducted off the unit is performed at the patient’s bedside, requiring 1:1 RN care. These powerful data of clinical events, which are beyond a nurse manager’s control, will contribute to improved communication with fiscal colleagues regarding the patient care operations and budgeting. Additionally, to be recognized as a Magnet facility, every organization describes their valid and reliable methodology for adjusting nurse staffing for patient acuity and other clinical events such as ADT.¹⁸

SUMMARY AND PROVIDING REAL-TIME ACTIONABLE DATA

The chief nursing officer is an influential change agent toward a reliable application of staffing evidence, centered on the patient and family. Patient care resource management has evolved to significant complexity amidst disparate or non-existent systems—remember our 6-week paper scheduling sheets or home-grown Excel spreadsheets! Systems that integrate the individual patient condition and progress with nurse staffing strengthen resource decision-making and patient-centered care. The patient and nurse staffing data described in this paper must be real-time and actionable to support the work of the nursing staff for every shift. The integrated patient and staffing technologies are here, and we must increase the speed with which we leverage the data in the electronic clinical documentation system and use this evidence in everyday practice.

In writing about outcomes work, Kinnaird and Dingman articulate that the evidence must be not only meaningful but also motivating to improve the way we work.¹⁹ The financial incentives for quality outcomes created by value-based purchasing provide an opportunity to apply staffing evidence and build in sustainability. Staffing does matter, and now is the time to embrace evidence to drive resource decision making for positive patient outcomes, strong fiscal stewardship, and a professional and satisfying workplace. Let’s continue this dialogue. **NL**

Continued on page 35

We experienced multiple software upgrades over the course of the several years and the implementation of an EHR and computerized physician order entry in the ED a year before this go live. We did not perform well in some of these implementations. We made a thousand mistakes to get to this point and have continued to improve implementation process. We will implement computerized physician order entry and progress notes this year and will use the model we created for this implementation to ensure success.

Our lessons learned from this project center around the key role the Facility Implementation Team played in all phases of this process. This venue allowed all stakeholders to bring forward issues and to fully understand the impact of this implementation.

The overarching communication strategy and the multi-disciplinary team that implemented the process was successful in ensuring all stakeholders were informed before, during, and after the implementation. Using a multimedia approach to disseminate the information internally and externally to our stakeholders was a valuable component.

Engaging focus groups with frontline staff in identifying and improving the flow of the documents in the electronic world is critical to listen and learn from the end user. We continue to hold routine meetings with key frontline staff members to enhance the performance of the system and streamline their workflow.

Scheduling system initialing was through our electronic learning network, which proved to be a mistake. We regrouped, working directly with the managers to ensure the staff got into the right class for their job. Initially, our training included combined user groups such as nursing and cardiopulmonary. This proved to add complexity to the training class and displeased staff members. Subsequently, we tailored the class to the individual discipline's particular needs.

The implementation of an EHR is a complex process, which impacts all levels of an organization. A methodical approach and the engagement of key stakeholders with an overarching communication plan are keys to the success of end-user adoption of the change. **NL**

References

1. ARRA: Leveraging the American Recovery and Reinvestment Act: Critical Success Factors to Maximize ARRA HITECH Incentives. An Eclipsys Whitepaper. July 2009. Atlanta, GA: The Eclipsys Outcome Company; 2009.
2. Health IT Policy Council recommendation to National Coordinator for Defining Meaningful Use. Final—August 2009. Washington, DC: Department of Health & Human Services; 2009.
3. Wood JT III, Aceves R. Five steps to electronic health record success. *Healthc Financ Manage*. 2005;59(1):56-61.
4. Creasey T, Hiatt J. Best Practices in Change Management: Prosci Benchmarking Report 575 Organizations Share Lessons and Best Practices in Change Management. Loveland, CO: Prosci Research 2009.
5. Karnas J, Robles J. Implementing the electronic medical record: Big Bang or phased rollout? *Creat Nurs*. 2007;13(2):13-16.

Ellen Pitcher, RN, MSN, MBA NEA-BC, is the chief nursing officer/chief organizational officer of Baylor Regional Medical Center at Plano, Texas. She can be reached at Ellen.Pitcher@Baylorhealth.edu.

1541-4612/\$ See front matter
Copyright 2010 by Mosby Inc.
All rights reserved.
doi:10.1016/j.mnl/2010.03.005

Evidence-Based Staffing: The Next Step

Continued from page 26

References

1. Saad L. Honesty and ethics poll finds Congress' image tarnished. <http://www.gallup.com/poll/124625/honesty-ethics-poll-finds-congress-image-tarnished.aspx>. Accessed January 18, 2010.
2. Institute of Medicine. *Keeping Patients Safe: Transforming the Work Environment of Nurses*. Washington, DC: The National Academies Press; 2004.
3. Litvak E, Buerhaus P, Davidoff F, Long M, McManus M, Berwick D. Managing unnecessary variability in patient demand to reduce nursing stress and improve patient safety. *Jt Comm J Qual Patient Saf*. 2005;31(6):330-338.
4. Anderson R, Kerfoot K. The time has come for evidence-based staffing and scheduling. *Nurs Econ*. 2009;27(5):277-279.
5. Douglas K. Excellence and evidence in staffing. 2008. www.globalnursingnetwork.org. Accessed January 18, 2010.
6. Thompson JD, Diers D. Nursing resources. In: Fetter RB, Brand DA, Gamache D, eds. *DRGs: Their Design and Development*. Ann Arbor, MI: Health Administration Press; 1991:121-183.
7. Flood S, Diers D. Nurse staffing, patient outcome and cost. *Nurs Manage*. 1988;19(5):34-43.
8. Czaplinski C, Diers D. The effect of staff nursing on length of stay and mortality. *Med Care*. 1998;36(12):1626-1638.
9. Pickard B, Warner M. Demand management: a methodology for outcomes-driven staffing and patient flow management. *Nurse Leader*. 2007;5:30-34.
10. Donahue L. A pod design for nursing assignments. *Am J Nurs*. 2009;109:38-40.
11. Pappas SH. Describing costs related to nursing. *J Nurs Admin*. 2007;37:32-40.
12. Joint Commission on Accreditation of Healthcare Organizations. Approved: staffing effectiveness requirements for hospitals and long term care organizations. *Jt Comm Perspect*. 2010;30(1):7.
13. Welton J, Zone-Smith L, Bandyopadhyay D. Estimating nursing intensity and direct cost using the nurse-patient assignment. *J Nurs Admin*. 2009;39:276-284.
14. Pesut D. 21st century nursing knowledge work: reasoning into the future. In: Weaver C, Delaney C, Weber P, Carr R, eds. *Nursing and Informatics for the 21st Century*. Chicago, IL: Healthcare Information and Management Systems Society; 2006:13-21.
15. Goode C, Krugman M. Evidence-based practice: a tool for clinical and managerial decision making. In: Docterman JM, Grace HK, eds. *Current Issues in Nursing*. 6th ed. St. Louis, MO: CV Mosby; 2001:60-112.
16. Pappas SH. The cost of nurse-sensitive adverse events. *J Nurs Admin*. 2008;38:230-236.
17. Buerhaus P. Avoiding mandatory hospital nurse staffing ratios: an economic commentary. *Nurs Outlook*. 2009;57:107-112.
18. American Nurses Credentialing Center. *Application Manual Magnet Recognition Program®: Recognizing Nursing Excellence*. Silver Spring, MD: American Nurses Credentialing Center; 2008.
19. Kinnaird L, Dingman S. Outcomes measurement. In: Koloroutis M, ed. *Relationship-Based Care*. Minneapolis, MN: Creative Health Care Management; 2004:215-248.

Sharon Eck Birmingham, DNSc, MA, BSN, RN, is the chief nursing executive at Clairvia in Durham, NC, and serves as adjunct faculty at the schools of nursing at the University of North Carolina, Iowa, and Yale University. She can be reached at sbirmingham@clairvia.com

Acknowledgment

The author gratefully acknowledges Dr. Sharon Pappas for her intellectual contributions to this paper.

1541-4612/\$ See front matter
Copyright 2010 by Mosby Inc.
All rights reserved.
doi:10.1016/j.mnl/2010.03.003