

2006 HSR Impact Awardee

The Business Case for Nurse Staffing

SNAPSHOT OF SUCCESS

More Registered Nurses Mean Improved Quality of Care, Potential Cost Savings

The AcademyHealth Health Services Research Impact Award (HSR Impact Award) recognizes outstanding examples of the positive impact of health services research on health policy or practice. HSR Impact Awards are evaluated based on the quality of research presented, success of the translation to policy or practice, and benefit to the target population. The award is presented annually.

THE ISSUE

Registered nurses (RNs) are in high demand and short supply. After a steady decline in nursing school enrollment from 1995-2001, interest in the field has begun to rebound. However, today's nursing schools lack the capacity to meet demand due to shortages of faculty (many of whom are retiring), classroom space, and clinical space in health care facilities where nursing students gain first hand experience with patients. The capacity constraints are not trivial, as an estimated 125,000 qualified applicants were turned away from U.S. nursing education programs in 2004. The United States can anticipate further decline in available registered nurses as the baby boomer generation reaches retirement age – increasing the net population seeking health care and decreasing those available to provide it. So, even with renewed interest in the field, it is unlikely there will be enough registered nurses to meet projected future needs. As a result, U.S. health care providers increasingly turn to recruitment of nurses from other parts of the world. Complicating the issue, research has shown an association between low hospital nurse staffing and quality of care.



Findings of a study published in the May 30, 2002 *New England Journal of Medicine* established a relationship between hospital nurse staffing and patient outcomes. The investigation, led by Jack Needleman, Ph.D., associate professor in the Department of

Health Services in the UCLA School of Public Health and Peter Buerhaus, Ph.D., R.N., FAAN, Valere Potter Professor and senior associate dean for research, Vanderbilt University School of Nursing, found that patients in hospitals with fewer registered nurses stay longer and are more likely to suffer complications, such as urinary tract infections and upper gastrointestinal bleeding, than patients in hospitals with more RNs.

In the initial investigation, researchers analyzed more than six million patient discharge records from 799 hospitals in 11 states during 1997. The investigators examined the relationship between the amount of care provided by nurses—including RNs, licensed practical nurses (LPNs), and nurses' aides—and patient outcomes, taking into account differences in the patients' level of risk and the mix of patients being treated. Patients at hospitals with a lower proportion of RNs had significantly higher rates of six complications (longer hospital stays, higher rates of urinary tract infections, pneumonia, shock/cardiac arrest, upper gastrointestinal bleeding, and failure to rescue) when compared with patients in hospitals that had more RNs. Among surgical patients, low RN staffing correlated with increased rates of failure to rescue and urinary tract infections.

Overall, hospitals with high RN staffing had lengths of stay that were 3 to 5 percent shorter, and complication rates 2 to 9 percent lower, than hospitals with low RN staffing. RN staffing appeared to have a greater impact on quality of care than did staffing by LPNs or aides, positions that require less training and education. The study found no consistent association between outcomes and staffing by LPNs or aides.

In a recent follow-up investigation, Needleman, Buerhaus, et al simulated the effect of three different options to increase nurse staffing to determine if increased nurse staffing costs might be offset by savings from improved quality. These options were:

1. Increase the proportion of hours of care provided by RNs
2. Increase the number of licensed (RNs or LPNs) nursing hours per day
3. Increase both the proportion of registered nurses and nursing hours per day

Costs of increased nursing hours were estimated from the original sample. Estimates of avoided adverse events and hospital days were simulated from the original sample and avoided costs and deaths were estimated using additional regression analysis.

The second analysis found that all three scenarios for increased nurse staffing reduced adverse outcomes, hospital days and deaths to varying degrees. However, increasing the proportion of care hours provided by RNs offered the greatest potential costs savings, because the costs of changing the RN/LPN mix without changing total nursing hours is relatively low. While the second two options were also associated with reduced costs, these savings were offset by a significant increase in staffing expenses. The authors contend there is a strong business case for the first option, and a strong case-based on value-for spending more on nursing to realize higher quality, a case that should be subject to widespread discussion and debate.

The researchers initial report placed the nursing shortage prominently in the public's eye—and on policymakers' agendas. The findings were widely reported in newspapers, magazines, and radio programs across the country, including a "60 Minutes" episode reporting the results and highlighting multi-national nurse recruiting by hospitals.

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Nurses (continued)

In August 2002, Congress passed the Nurse Reinvestment Act—a bill that authorizes the Department of Health and Human Services to create public service announcements promoting the nursing profession, award grants to nursing schools to help increase enrollment, and create a fast-track nursing faculty training program. The bill also provides scholarships for those who agree to work in nursing shortage areas after graduation, and increases the matching rate for Medicaid nurses' aide training and competency evaluation programs.

"One of our goals was to help move the policy discussion from the question of whether nursing makes a difference to patients—which we and other researchers have now clearly established—to an

examination of what should be done about it," says Needleman. "Our study and the visibility it received helped do this."

Organizations accrediting, regulating, and monitoring quality of care also took notice. The Joint Commission on Accreditation of Healthcare Organizations adopted a new standard on staffing performance that incorporated two outcomes from the original study. And, in 2004, the failure-to-rescue measure was adopted by the National Quality Forum's National Voluntary Consensus Standards for Nursing-Sensitive Care and adapted by the Agency for Healthcare Research and Quality's (AHRQ) revised HCUP Patient Safety Indicators.

FACTS

About half of the RN work force will reach retirement age in the next 15 years.

Nurses for a Healthier Tomorrow

Registered nurses make up the largest health care occupation with more than 2 million jobs. *Bureau of Labor Statistics*

Nominal earnings for registered nurses increased steadily from 1983 until 2000, yet after adjusting for inflation, that growth proved relatively flat after 1991. However, as reported by Buerhaus, Staiter, and Aurebach (*Health Affairs*, 2004), inflation adjusted earnings increased 5.0% in 2003 and 1.8% in 2004. *Health Resources and Services Administration*

RELATED INFORMATION

Dr. Needleman's follow-up analysis was published in the January/February 2006 edition of *Health Affairs*. www.healthaffairs.org

Dr. Needleman and colleagues also published an article outlining strategies to address the nursing workforce in hospitals. See: Buerhaus, P. et al. "Strengthening Hospital Nursing," *Health Affairs*, Vol. 21, No. 5, September/October, 2002, pp. 123-32.

Dr. Buerhaus and colleagues published the first study to describe the aging of the RN workforce and to assess its implications for the future. See: Buerhaus, P., et al. "Implications of a rapidly aging registered nurse workforce," *The Journal of the American Medical Association*, Vol 283, No. 22, 2000, pp. 2948-54.

The Department of Health and Human Services awarded more than \$22 million in grants through the Health Resources and Services Administration for colleges, universities, and other groups working to increase the number of qualified nurses in the United States. Another \$8 million has been set aside to repay student loans for critical care nurses who work in nursing shortage areas after graduation. For more information, visit www.bhpr.hrsa.gov/grants/#nursing

The National League for Nursing (NLN) sponsors grants that research nursing education, particularly in one of their six nursing education research priorities. Information on the submission process and past grant recipients is available at www.nln.org/aboutnln/grants.htm

The September/October 2002 issue of *Health Affairs* focuses on the nursing shortage in this country and its impact on patient care. Some of the articles in the issue are available online at www.projecthope.org.

Linda Aiken and others at the University of Pennsylvania found that, in hospitals with high patient-to-nurse ratios, each additional patient per nurse translated into a 7 percent increase in the possibility of a patient death within 30 days of admission. The research, published in the *Journal of the American Medical Association (JAMA)*, looked at surveys from more than 10,000 nurses and more than 230,000 general, orthopedic, and vascular surgery patients at 168 hospitals in Pennsylvania during 1998 and 1999. The study appears in the Oct. 23/30, 2002, issue of *JAMA*, and is also available at <http://jama.ama-assn.org/issues/v288n16/rfull/joc20547.html>

What is health services research?

Health services research examines how people get access to health care, how much care costs, and what happens to patients as a result of this care. The main goals of health services research are to identify the most effective ways to organize, manage, finance, and deliver high-quality care; reduce medical errors; and improve patient safety.

— Agency for Healthcare Research and Quality

WEBSITES

American Nurses Association
www.ana.org

American Association of Colleges of Nursing
www.aacn.nche.edu

American Academy of Nursing
www.nursingworld.org/aan

American Association of Managed Care Nurses, Inc.
www.aamcn.org

American Association of Critical Care Nurses
www.aacn.org

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