

Improving Patient Safety: The Link Between Nursing and Quality of Care

Linda H. Aiken, Ph.D., R.N.

Nurses are at the front lines of health care delivery. In fact, they constitute the largest group of health care professionals providing direct care to patients in U.S. hospitals.

But until recently, the impact of nursing on the quality of patient care was not well understood. Today, that link is much clearer, due largely to the work of Linda H. Aiken, Ph.D., R.N., the Claire M. Fagin Leadership Professor in Nursing and Director of the Center for Health Outcomes and Policy Research at the University of Pennsylvania. Widely publicized research by Aiken demonstrates that, in hospitals with high nurse staffing levels, patient outcomes are better. At the same time, nurses are more satisfied with their jobs and suffer less from stress.

In short, Aiken's studies, supported by a Robert Wood Johnson Foundation (RWJF) Investigator Award in Health Policy Research, make the case for improving nurses' work environments as a central strategy in the national campaign to guarantee patients a safe care environment.

Hospital nursing has long been subject to cyclical staffing shortages, caused mainly by mismatches between supply and demand. But a 2002 report commissioned by RWJF, *Health Care's Human Crisis: The American Nursing Shortage*, argues that shortages today are quantitatively and qualitatively different from those of the past, reflecting widespread dissatisfaction among nurses with their jobs and expanded career opportunities for women.

The report, which cites Aiken's work, notes that fewer young people are entering the nursing profession, and that many who start out in nursing soon change careers. In addition, many long-time nurses are leaving bedside nursing or retiring. An estimated 126,000 nursing positions are currently unfilled in hospitals across the country. Such a high level of vacancies leads to heavy workloads, and working overtime is common.

Combined, these pressures could have serious long-term consequences for the nursing profession. According to recent estimates from the U.S. Department of Health and Human Services, the nursing shortage will continue to worsen without immediate action: By 2020, the U.S. will need between 500,000 and 800,000 more nurses than it had in 2000 to provide needed care.

What effects would a shortage of that magnitude have on the health care system? Aiken's research, which has been published in leading medical and health journals, provides some clues. Among her findings:

- For every patient added to the average hospital staff nurse's workload, the risk of death following common surgical procedures increases by 7 percent and the risk of failure to rescue patients with complications increases by 7 percent. Aiken found a 30 percent difference in mortality following surgery between hospitals where the average nurse workload is four patients and hospitals where the average workload is eight patients.
- Heavy workloads also contribute to staffing shortages, Aiken's research suggests. For each patient added to a nurse's workload, rates of burnout and job dissatisfaction, two key precursors of job turnover, rise by 23 percent and 15 percent, respectively.
- Every 10 percent increase in the proportion of a hospital's nurses holding a bachelor's degree or higher is associated with a 5 percent decline in mortality and failure to rescue following common surgical procedures.

A National Program of
The Robert Wood Johnson Foundation

National Program Office:
Rutgers, The State University
of New Jersey

Institute for Health, Health Care Policy,
and Aging Research

317 George Street, Suite 400
New Brunswick, NJ 08901-2008

phone: 732.932.3817 ext.256
fax: 732.932.3819
email: depdir@ifh.rutgers.edu
www.ihhpar.rutgers.edu/rwjf

- Hospitals with high levels of nurse burnout also have high levels of patient dissatisfaction.
- Overtime and work shifts of more than 12 hours for hospital staff nurses are related to higher error rates.

Framing Nursing as a Health Policy Issue

Aiken's research has put nursing squarely on the health care agenda. By taking nursing workforce problems and connecting them to patient safety, Aiken explains, "you increase the number of stakeholders that are interested in answers."

The Institute of Medicine (IOM), a leader in the patient safety movement, addresses the role of nursing in its 2004 report, *Keeping Patients Safe: Transforming the Work Environment of Nurses*, which includes numerous references to Aiken's research on the link between nurse staffing patterns and patient safety and quality of care. The report calls for transforming the nurse work environment along the lines suggested by Aiken's research. For example, in the area of workforce deployment, the IOM recommends increasing oversight in intensive care units when staffing falls below one nurse per two patients.

"Nurses feel personally responsible for providing safe and effective care," Aiken says. "If they are working in an environment where they can't control the resources to meet patients' needs, there is no way to do a good job." That sentiment often prompts nurses to leave their jobs, she notes.

Aiken's research results are influencing policymakers and hospital executives across the country.

States, for example, are taking a variety of legislative and regulatory approaches to address nurse staffing, according to the American Nurses Association. Minimum nurse-to-patient ratios have been enacted in California, and similar legislation has been introduced in other states. Several states are requiring health care facilities to develop nurse staffing plans, with input from practicing nurses, and others are requiring hospitals to use both minimum staffing ratios and nurse staffing plans. At least seven states have enacted legislation limiting mandatory overtime, and several others have introduced legislation to address it. States are also enacting legislation to support nursing education, develop workforce data collection systems, and protect whistleblowers in hospitals and nursing homes who report dangerous workplace conditions.

Searching for Solutions

Improving staffing levels to reduce job dissatisfaction is one way to prevent nurses from leaving the bedside, Aiken has found. Other solutions include innovative programs that encourage nurses to get their bachelor's degrees, "magnet hospitals" that put a high priority on nursing satisfaction and patient outcomes, and the use of pay-for-performance programs to evaluate and compensate the work of hospital care team members.

Prompted in part by Aiken's research showing lower mortality rates at hospitals with high levels of college-educated nurses, some hospitals are rolling out "creative educational programs" to help staff get their bachelor's degrees. For example, instead of simply reimbursing for tuition, some hospitals are working with universities to bring educational programming on site. Smaller numbers of hospitals are giving nurses time off with pay to complete their coursework. Such strategies are necessary, Aiken says, because when large numbers of staff are working overtime and suffering from burnout, "they don't have the time or energy" to take advantage of tuition reimbursement programs.

"Nurses feel personally responsible for providing safe and effective care," Aiken says. "If they are working in an environment where they can't control the resources to meet patients' needs, there is no way to do a good job."

In addition, more than 130 hospitals have been awarded “magnet hospital” status by the American Nurses Association, a designation that recognizes an institution’s commitment to patient outcomes, nursing satisfaction, low turnover rates, and effective dispute resolution. Hundreds more hospitals have applications in the works, Aiken says, adding that this growing interest in magnet hospital status is beginning to change work environments for nurses.

Another trend that stands to boost nursing satisfaction is increasing interest among health insurers in performance-based payment for hospital care, Aiken says. If her previous research linking staffing levels to mortality rates remains consistent, hospitals with sufficient nursing staff would demonstrate better clinical outcomes, and, therefore, reap more generous payments. “Hopefully, nursing would be more central in the consideration of what kinds of choices [hospitals] make in their investment of resources,” Aiken says.

Surprisingly, high entry-level wages do not guarantee long-term nursing satisfaction and stability, Aiken notes. “New nurses are highly compensated, but there is terrible wage compression within nursing,” she says.

For example, graduates of the University of Pennsylvania’s prestigious nursing school are the highest paid of all of the University’s graduates, including those from the Wharton School of Business. Many newly minted Penn nursing graduates begin their careers earning \$50,000 or more, but their salaries tend to flatten out shortly thereafter.

Will Hospitals Respond to Workforce Changes?

Although high entry-level salaries can bring a new crop of bright nursing grads to a hospital’s door, hospitals bent on attracting and retaining nursing staff are looking beyond generous pay and signing bonuses, Aiken says.

They’d be wise to do so. Nurses today have more options in the health care field and other areas of the workforce than they once did; they are no longer a “captive labor market.” In fact, labor force participation among nurses stands at 83 percent — a rate higher than that for American men. Nurses may leave their jobs when they become burned out or feel they aren’t providing their patients with good care. Frequently, however, they can use their nursing background to make a transition into other, non-hospital settings, such as insurance or drug companies. “As the health care industry grows, so do the opportunities for nurses,” Aiken notes.

Ironically, those opportunities could slow progress toward improving the quality of hospital care if enough nurses opt to leave the bedside and take their expertise to other areas of the labor market. But the prospects for nursing in the hospital setting will depend on how quickly remedies are put into place. “There is growing consensus about what the problem is, but not the will to make the required changes,” Aiken says. “Some of the solutions are more long-term in nature.”

Despite the lack of an easy fix, one thing is clear: People now regard nursing as an integral element of patient safety and quality improvement. With that recognition, nursing workforce issues will remain on the agenda as the national discussion on health care quality and patient safety continues to unfold, Aiken predicts.

Despite the lack of an easy fix, one thing is clear: People now regard nursing as an integral element of patient safety and quality improvement.

About the Investigator

Linda H. Aiken, R.N., Ph.D., is the Claire M. Fagin Leadership



Professor in Nursing, professor of sociology, and director of the Center for Health Outcomes and Policy Research at the University of Pennsylvania. She is also a senior fellow at the Leonard Davis Institute for Health Economics and research associate in the Population Studies Center. Before joining the faculty of the University of Pennsylvania in 1988, Aiken was vice president of The Robert Wood Johnson Foundation.

For the past two decades, Aiken's research has concentrated on health workforce issues and patient outcomes. Recent work has focused on variations in hospital outcomes in the U.S., Canada, the United Kingdom, and Germany, and on accumulating evidence to document the superior outcomes of care provided in magnet hospitals. She has also explored the substantive and methodological advances in health outcomes research across a variety of health care systems, hospital quality of care, innovative models of primary care, AIDS care and prevention, and mental health services.

Aiken is a member of the Institute of Medicine of the National Academy of Sciences, a fellow and former president of the American Academy of Nursing, an honorary fellow in the Royal College of Nursing of the United Kingdom, a member of the National Academy of Social Insurance, and a distinguished fellow of AcademyHealth.

She has received numerous achievement awards from national public policy and nursing organizations, including election as a Theodore Roosevelt Fellow in 2002 by the American Academy of Political and Social Science, the 2002 Barbara Thoman Curtis Award from the American Nurses Association, and the 2003 Individual Ernest A. Codman Award from the Joint Commission on Accreditation of Health Care Organizations.

Aiken and her co-authors were honored in 2003 with the Health Services Research Article of the Year Award by AcademyHealth for their paper in the *Journal of the American Medical Association* documenting the effect of nurse staffing on surgical mortality.

Publications

Dr. Aiken discusses nursing workforce issues in a variety of publications, including the following:

- Rogers AE, Hwang WT, Scott LD, Aiken LH, Dinges DF. The Working Hours of Hospital Staff Nurses and Patient Safety. *Health Affairs*, July-Aug. 2004; 23(4): 202-12.
- Aiken LH, Buchan J, Sochalski J, Nichols B, Powell M. Trends in International Nurse Migration. *Health Affairs*, May-June 2004; 23(3): 69-77.
- Vahey DC, Aiken LH, Sloane DM, Clarke SP and Vargas D. Nurse Burnout and Patient Satisfaction. *Medical Care*, Feb. 2004; 42(2 Suppl): II57-66.
- Aiken LH, Clarke SP, Cheung RB, Sloane DM and Silber JH. Educational Levels of Hospital Nurses and Surgical Patient Mortality. *Journal of the American Medical Association*, Sept. 24, 2003; 290(12): 1617-23.
- Clarke SP and Aiken LH. Failure to Rescue. *American Journal of Nursing*, Jan. 2003; 103(1): 42-7.
- Aiken LH. Achieving an Interdisciplinary Workforce in Health Care. *New England Journal of Medicine*, Jan. 9, 2003; 348(2): 164-6.
- Aiken LH. Superior Outcomes for Magnet Hospitals: The Evidence Base. In *Magnet Hospitals Revisited: Attraction and Retention of Professional Nurses*. Edited by Margaret L. McClure and Ada Sue Hinshaw (Washington, D.C.: American Nurses Publishing), 2002.
- Aiken LH, Clarke SP, Sloane DM, Sochalski J, and Silber JH. Hospital Nurse Staffing and Patient Mortality, Nurse Burnout, and Job Dissatisfaction. *Journal of the American Medical Association*, Oct. 23-30, 2002; 228(16): 1987-93.
- Aiken LH, Clarke SP and Sloane DM. Hospital Staffing, Organization, and Quality of Care: Cross-National Findings. *Nursing Outlook*, Sept.-Oct. 2002; 50(5): 187-94.
- Cooper RA and Aiken LH. Human Inputs: The Health Care Workforce and Medical Markets. *Journal of Health Politics, Policy, and Law*, Oct. 2001; 26(5): 925-38.

Dr. Aiken may be reached by phone at 215.898.9759, or by email at laiken@pop.upenn.edu.

To order additional copies of *Improving Patient Safety: The Link Between Nursing and Quality of Care*, contact the National Program Office of the RWJF Investigator Awards in Health Policy Research at 732.932.3817, or depdir@ifh.rutgers.edu.