

State of Connecticut



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Nurse-to-Patient Ratio Study

**A Report on the Current Nursing
Environment in Connecticut Hospitals**

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EXECUTIVE SUMMARY

Continuing changes within the health care field have brought to the forefront a growing awareness and concern regarding the quality of health care being delivered today in the nation's acute care hospitals. This report summarizes the state of acute care hospitals today, looks at how this environment influences the trends within nursing, examines how these trends are affecting Connecticut's hospitals, and concludes with a review of what initiatives and legislative actions are being taken to address the issues.

Patient Care in the Hospital Today

Beginning with an overview of the general state of acute care services, the report examines how limited resources are impacting today's hospitals. The employment trends within hospitals are then looked at with an overview of historical studies done in the area of staffing and health care quality. The area of nursing specific quality and safety indicators are reviewed from a broad national perspective and then from a more focused state perspective.

Assessment of Current Nursing Trends

A look at the general statistics and demographics for a more specific view of the nursing element of the acute care experience is then examined. A profile of national and state trends create a framework for a more detailed picture of the current environment that impacts the 31 Connecticut acute care hospitals. The results of the hospital survey enable a preliminary analysis of specific Connecticut hospital data variables that potentially impact quality of care and staffing in the current acute health care environment.

Current Legislation and Initiatives

A look at national legislation shows that the studies of patient safety, quality of care and links to staffing are just beginning to take shape in the form of bills currently winding their way through the House and Senate. An examination of state initiatives shows a more aggressive approach addressing health care quality issues. These initiatives include various levels of studies involving outcomes, staffing and quality care. Last fall, California became the first in the nation to move forward and pass legislation imposing a state nurse-patient mandate as its proposed solution to address staffing issues.

Key Findings and Recommendations

The report concludes with a summary of the key findings and recommendations on ways to move forward with further analysis to address this quality of care issue. A key component needed to make definitive conclusions on how quality and outcome variables relate to nursing is a need for standardized data collection and public availability of timely aggregate data. Without standardization, the analysis of data currently available is inconclusive and without access to current data, analysis is limited. The overall recommendation is to partner with other health care quality initiatives and efforts currently in place in Connecticut and nationally. This would allow collaboration of time, resources, and expertise on the subject, to further study the effects that staffing changes have on actual patient care outcomes in Connecticut's current acute care setting.

LEGISLATIVE MANDATE

Public Act No. 99-249 Section 7a: The Commissioner of the Office of Health Care Access, within available appropriations, shall conduct a study on the public health effects of nurse-patient ratios in hospitals.

In June of 1999, Public Act No. 99-249 was passed, mandating the Office of Health Care Access to conduct a study on the public health effects of nurse-patient ratios in hospitals.

The Commissioner's findings and recommendations contained within this report will be distributed to the Joint Standing Committee of the General Assembly on February 9, 2000. The goal of this report is to summarize current national and state data and identify trends in nursing care provided in today's hospital environment, and to determine what impact these trends have on patient care delivery.

Data analysis that draws definitive cause and effect between current staffing patterns and patient care outcomes is still in its infancy in terms of research and development. However, more data continues to emerge in this field over time, as patient care quality and changes in hospital staffing patterns across the country are explored in more depth through grant and research funding. The scope of this report therefore, will focus on the key issues related to Connecticut acute care hospitals and their related staffing patterns and quality measures. Current trends and research to date in this area will also be discussed.

PATIENT CARE IN THE HOSPITAL

GENERAL STATE OF ACUTE CARE SERVICES

The hospital industry as a whole has undergone widespread restructuring and reorganization over the last several years. The related workforce changes have led to a growing concern among providers of care that staffing changes have compromised quality of care and created patient safety issues. Media coverage on the issues and congressional concern echo these themes, and there have been a number of reports and studies done to research the relationship between nurse staffing and patient outcomes.

Acute Care Hospital Resources

How does acute care hospital resource availability influence internal staffing and quality health care? Resources include people, such as the staff needed to care for patients; finances, an area shrinking for those hospitals with Medicare reimbursement; and time, with down-sizing and restructuring, a need to do more with less. According to the Dartmouth Atlas of Health Care, there were dramatic differences in levels of acute care hospital resources documented from 1992 through 1996. The Atlas shows wide variation in the numbers of acute care hospital beds, employees and registered nurses by region and by state.¹ Shrinking hospital resources and these growing trends raise the following question: has research demonstrated a link between resources and quality? Looking at studies over the last 10 years, there seems to be new evidence emerging that points to a link between the two.

Historical Perspective

In 1993 the National Academies Institute of Medicine (IOM) was commissioned by Congress to study the adequacy of nurse staffing in hospitals and nursing homes. The study had recommended greater involvement of nurses in restructuring initiatives and called for more research on the relationship between nurse staffing and patient outcomes. In 1996, the IOM reported that it found little evidence to support the reports and testimony provided by care givers that staffing levels had an adverse effect on the care being given.

New Findings

New studies conducted after the 1996 congressional report was released, however, do provide empirical data that support nurses' perception of fewer licensed caregivers at the bedside. Linda Aiken's research in late 1996 from the Center for Health Services & Policy Research at the University of Pennsylvania, under a grant from the Baxter Foundation, attempted to reconcile nursing's perception regarding reduction in staffing levels. This study showed that while Registered Nurse (RN) full time equivalents (FTE's) increased, when RN to patient ratios were adjusted for the Medicare case-mix increase to account for acuity, there was almost no change seen in the ratios over the 10 year period. This factor coupled with a decline in unlicensed nursing personnel, contributed to a net effect of an increase in non-clinical personnel relative to clinical staff. This meant that the nurses' perception that there were indeed less licensed nurses at the bedside administering direct patient care was correct because once adjustments were made for patient illness, the ratio of licensed nurse to non-licensed care giver had declined.

¹ The Dartmouth Atlas of Health Care 1999

Hospital Employment Trends

Upon examination of the national literature available on the subject of nursing and safe staffing practice, several interesting trends emerged. A recent report by the California Nursing Association summarized the following themes on the subject²

- A Cornell University Study, using American Hospital Association data, published in *Hospitals & Health Networks* magazine in 1998, found that eight out of ten hospitals that have launched restructuring programs have reduced nursing staff.
- A recent national survey by Boston College School of Nursing of 7,500 RNs reported that 60% of those surveyed had experienced a reduction in the number of RNs providing direct care, and 40% reported a substitution of unlicensed personnel for RNs. The study documented increased medication errors, unexpected patient readmissions, complications, wound infections, patient injuries, and patient deaths.
- The Centers for Disease Control and Prevention (CDC) in Atlanta has identified a link between improved nurse to patient ratios and lower hospital outbreaks of bloodstream infections.
- A 1994 study by Linda Aiken, Ph.D., and her University of Pennsylvania School of Nursing colleagues found that hospitals that empower nurses to adequately use their professional skills had a 7.7% lower mortality rate than did hospitals which did not place the same emphasis on nursing care.
- Thirteen separate studies on nursing care in the late 1980s and early 1990s analyzed by Patricia Prescott, RN, Ph.D. in late 1993 documented a direct correlation between safe staffing levels and lower mortality rates and other related patient outcomes.
- A survey by an established nursing professional practice committee at Columbia/HCA Good Samaritan Hospital in San Jose, CA late last year documented a sharp rise in the filing of reports by RNs who were objecting to assignments that were unsafe to the nurse, patient, or both. Most of the reports concerned short staffing, and a substantial number involved the use of inappropriate or inexperienced personnel.

These trends were reiterated recently when a high profile patient safety report by the National Academy of Sciences Institute of Medicine was published.

Institute Of Medicine (IOM) Patient Safety Report

The report published by the IOM in November 1999 estimated that anywhere from 44,000 to 98,000 hospitalized patients a year die from medical mistakes in America. IOM compared these statistics to the mortality figures of highway accidents (43,450) breast cancer (42,300) and AIDS (16,500) and called the numbers “unacceptable.” The report called for major changes in the nation’s health care system to protect hospital patients. The IOM suggested that a minimum of 50% reduction in medical errors should be a goal over the next five years stating that there are ways to reduce and prevent many of the mistakes happening in today’s hospital system. The report suggests the mistakes are not necessarily from recklessness of individuals, but rather from flaws within the system as a whole.

² Nursing Practice Alert, November 1, 1999

QUALITY WITHIN ACUTE CARE SERVICE

The National Approach: ANA Nursing Safety and Quality Initiative

In 1994 the American Nurses Association (ANA), concerned about the professional well being of their nurses along with a growing concern over patient care outcomes, started to look at nursing sensitive quality indicators. Setting advocacy for quality safe patient care as a priority, the ANA launched an initiative with the State Nurses Associations (SNA) in December 1994. This program called “Nursing’s Safety and Quality Initiative,” initially focused on the acute care setting but now has gradually expanded to encompass all health care settings. As a result of the Nursing’s Safety and Quality Initiative launched in 1994, the ANA has sponsored several studies focusing on correlations between patient outcomes and nursing care.

Study 1: Nursing Report Cards for Acute Care Settings (1995)

The first study prepared by Lewin-VHI, Inc for the ANA explores linkages between nursing care and patient outcomes by identifying 21 nursing sensitive quality indicators. While all related indirectly to outcomes and quality, two directly related to nurse patient ratios. The measures identified in the report were supported by expert opinion and limited research that was available at the time of the report. The quality indicators were divided into three groups: outcomes, process and structure indicators.

Outcomes Indicators focused on how patients and their condition are affected. They included:

- Mortality Rate;
- Adverse Incidents;
- Patient/Family Satisfaction;
- Complications;
- Length of Stay; and
- Patient Adherence to Discharge Plan.

Process of Care Indicators focused on how care is delivered. These eight indicators included:

- Nurse Satisfaction;
- Assessment and Implementation of Patient Care Requirements;
- Pain Management;
- Patient Education;
- Assurance of Patient Safety;
- Responsiveness to Unplanned Patient Care Needs;
- Maintenance of Skin Integrity; and
- Discharge planning.

Structure of Care Indicators measured staffing patterns affecting quality. These seven indicators included:

- Ratio of registered nurse to total nursing staff;
- Registered nurse staff qualifications;
- Ratio of total nursing staff to patients;
- Total nursing care hours provided per patient;
- Staff continuity;
- Registered nurse overtime; and
- Nurse staff injury rate.

The report card's purpose was to provide a framework to educate nurses, consumers, and policy makers regarding nursing's contribution to inpatient hospital care. It was viewed as a starting point to begin to address patient care needs and the impact that nursing has in this area.

There were two main barriers identified when looking at these indicators.

- 1) Data for the indicators were either not publicly available or were not being collected.
- 2) Many of the outcomes related indicators lacked a direct tie to nursing due to several factors including:
 - the complex nature of health status;
 - limited patient outcome research that isolates nursing care as a variable; and
 - difficulties measuring impact of specific factors on differences in survival and patient status.

A review of the literature on the research studies that were available at the time of the report identified several themes or patterns related to nurse staffing and quality including links to mortality rates, patient satisfaction, employee (nurse) satisfaction, and skill mix.

Report Conclusions

The study concluded that even though there was evidence to link the 21 identified nursing indicators to quality of care, limited access to data and little standardized data collection restricted the ability to collect this data for a comprehensive nursing report card.

The consultant recommended focusing on an initial core set of 10 nursing quality indicators. The first five indicators were identified as more widely available and collected. They included:

- Skill mix (percentage of licensed to unlicensed staff);
- Total nursing staff to patients;
- R.N. education;
- Nurse staff turnover; and
- Use of agency nurses.

In the second set, an additional five indicators were added for further development. The consultant felt they would be ideal to include in a report card because these indicators had a clearer link between outcomes and quality care. They include:

- Nosocomial Infections;
- Decubitus Ulcers (bed sores);
- Medication Errors;
- Patient Injury Rate; and
- Patient Satisfaction.

Further Research

The study concluded with additional data sources that could be used in further analysis. Areas for further study included nursing acuity systems, Department of Veterans Affairs databases, and detailed case study exploration.

Overall, the ANA has sponsored projects in six states that look at the effects of nursing quality indicators. The next phase of research planned by the ANA is to expand the state project data collection effort. The work will include standardizing indicators and refocusing with an emphasis on quality and patient safety rather than the initial focus on cost containment. The plan is to establish a strategic vision and infrastructure to begin to lay the groundwork for reliable and valid data collection and measurement related to nursing process and patient outcomes in order to improve care delivery in the years ahead.

Study 2: Implementing Nursing's Report Card (1997)

This ANA-commissioned study conducted by NETWORK, Inc. a Dover New Jersey hospital and health care consulting firm, builds upon the previous work done by the Lewin-VHI consultants. The focus of the work explored and expanded on key elements of staffing, length of stay and patient outcomes. The report covered the impact of nursing care on patient outcomes. One of the purposes of the report was to assess the feasibility of capturing information to develop staffing and outcomes measures. The data quantified staffing and patient incidents into four areas and measures the relationship between the variables. The study looked at patients in 502 hospitals in California, Massachusetts and New York. It evaluated registered nurse hours as compared to total nursing hours and adjusted for variables to control for patient acuity or case mix, teaching status of the organization and elements of care within the hospital setting. The results showed a shorter length of stay was strongly associated with higher nurse staffing as well as a significantly lower patient mortality rate with a higher RN skill mix.

Study 3: Principles for Nurse Staffing (1999)

In 1998 the ANA convened a panel of experts in health service research and nursing practice. The expert panel assisted the ANA in their effort to focus on further understanding and addressing issues related to nurse staffing. The panel discussed changes in the health care delivery system and how the changes had increased the complexity of the nursing role. This fact, along with an exodus of experienced nurses from acute care facilities and an expected nursing shortage, shifted the panel's focus to the core issue of the validity of the current methodology used to determine "appropriate" staffing.

Staffing Calculation Methodology

The panel agreed that current methodology including calculations using the traditional nursing hour per patient day (HPPD) lacked significant scientific support as an effective unit of analysis to project staffing. This determination caused the focus of the panel to shift and look at staffing using a different unit of analysis that would better reflect the overall flow of activity of the patient care unit. Unit based measurement takes into account other variables not included in the HPPD approach including complexity of patient care required, volume, transactional issues, episodes of care, and intensity.

Nurse Staffing Principles

The panel identified nine principles for determining nurse staffing. The principles were divided into three categories.

- Patient Care Unit Related;
- Staff Related; and
- Institution/Organization Related.

Recommendations

The panel's recommendation was that all changes within staffing levels, including changes in numbers and skill mix of staff that occur in today's system, should be based on an analysis of standardized nursing sensitive indicators. As supported by most current literature on the subject, the panel cautioned that any interpretation of data related to staff levels, patterns and corresponding patient outcomes without consistent and meaningful variable definitions would be misleading. This is an important point to keep in mind. This recommendation is significant in looking for solutions on how Connecticut should handle similar findings from current state trends.

According to the American Nurses Association, all of the above sponsored national reports, studies and initiatives have been undertaken to help facilitate a professional group effort to focus on a critical health care issue, the measurement of patient outcomes and their linkage to quality and safety within patientcare. These studies mirror other research findings and continue to help in the progress of consistent data collection and study of nurse sensitive variable data.

The State Approach: Connecticut Colleagues in Caring

The American Nurses Association has largely spearheaded the efforts at the national level. At the state level, in July of 1996, the Connecticut League for Nursing was awarded a three-year grant by the Robert Wood Johnson Foundation. This grant was part of a national initiative to address the need for collaborative planning and implementation of nursing workforce issues and policies at a state level. This project, called “Colleagues in Caring,” has brought together many of Connecticut’s health care leaders to establish a statewide consortium made up of providers, payers, educators, professional groups, and governing bodies. This consortium has focused on evaluating the Connecticut nurse workforce, the needs of the workforce, and the resources currently available in order to establish a plan to help address the health care needs of the employers and citizens within the state.

Project Structure

The initial structure established to guide the work of the consortium included a Steering Committee with representation from 25 groups within the state. The steering committee oversaw five task forces that focused on the following areas:

- Future Health Care Delivery;
- Future Data Collection;
- Nursing Practice;
- Nursing Resources; and
- Nursing Education.

The Research Advisory Group

Before kicking off the various task forces, a Research Advisory Group was established to study the resources currently available both within the state and nationally. This group determined that no agency had “in depth” demographic information available regarding the current Connecticut nurse workforce. They were able to get estimated numbers from the Department of Health and Human Services Division of nursing from a National Sample survey, as well as numbers of licenses from the State Board of Nurse Examiners and the Connecticut Department of Public Health. This information however, did not have the detailed demographic information needed to conduct a more in depth look at the Connecticut nursing population. During the same time period of data collection there were also 19 focus groups formed for purposes of collecting data from various nurses through out the state.

Renewal of Connecticut Colleagues in Caring Grant

Recently the consortium was notified that the grant was approved for renewal for an additional three years. One of the goals of the group is to identify and suggest modification of existing areas used for demographic collection of nursing data. If this demographic data were more readily available, it would help to identify shifts within the work force. This would allow more proactive planning to address the changing needs and impact on the health care environment already struggling with external factors that bring change within the system.

Given the current acute care hospital picture, along with a look at quality issues at the national and state level, how do these trends affect nurses as providers? To answer that question, nursing specific variables that impact today’s working professional must be explored.

ASSESSMENT OF SPECIFIC NURSING TRENDS

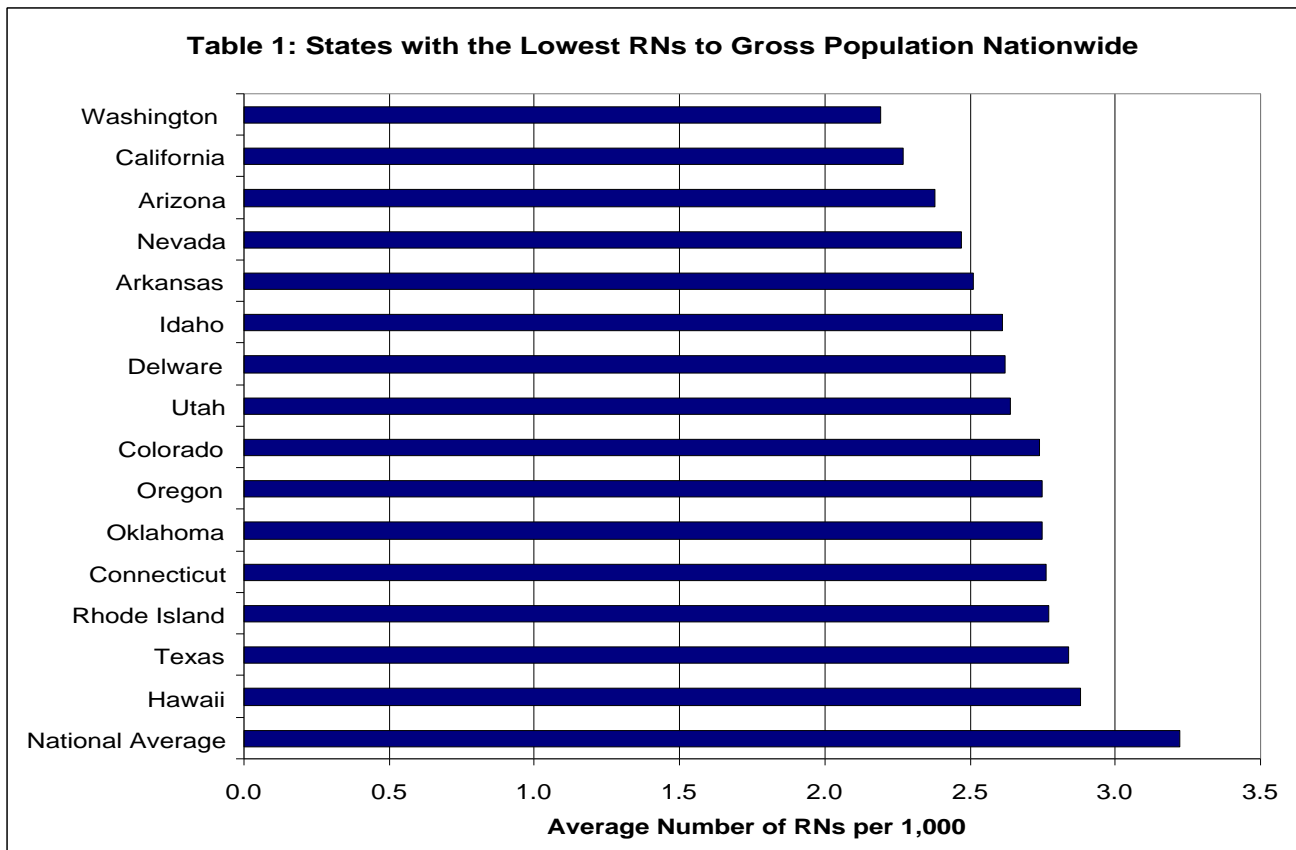
GENERAL NURSING STATISTICS AND DEMOGRAPHICS

In looking at general nursing statistics, several trends can be identified. Issues such as shrinking supply, increasing demand, and hospital restructuring all impact the nurse staffing situation seen in today's hospitals.

National Trends: Registered Nurses Employed in Acute Care Hospitals

In 1996 there were more than 877,900 full time equivalent (FTE) registered nurses working in the nation's acute care hospitals. This figure equates to an average of 3.2 RN's per 1,000 residents. The national registered nurse workforce distribution for 1996, similar to the distribution of hospital employees and beds, varied dramatically both by region and by state. Population density and nursing supply factors contributed to this variation.

Table 1 is the distribution of registered nurse by region and shows that 38 states have higher numbers of RN's per 1000 than Connecticut does. That is, Connecticut is ranked 12th out of 50 states, having one of the lowest ratios of nurse to resident with only 2.8 RN's per 1000 compared with a national average of 3.2.



Source: Dartmouth Atlas of Health Care 1999

Table 2: Comparison of Registered Nurses in Connecticut and US

| | Connecticut | | | | US* |
|-------------------------|---------------|----------|---------------|----------|---|
| | 1996 N=657 | | 1997 N=646 | | 1996 As indicated |
| EMPLOYED | 78.1% | | 78.7% | | 82.7% |
| AVERAGE AGE | 44.8 | | 45.1 | | 42.3 (in nursing) |
| SETTING | N | % | N | % | N=25,256 |
| Hospital | 329 | 50.1 | 278 | 43 | 60.1% |
| Community/Public Health | 98 | 14.9 | 110 | 17 | 13.1% |
| LTC/Nursing Home | 84 | 12.8 | 77 | 11.9 | 8.1% |
| Ambulatory Care | 55 | 8.4 | 56 | 8.7 | 8.5% |
| Student Health | 19 | 2.9 | 36 | 5.6 | 3.0% |
| Nursing Education | 5 | 0.8 | 4 | 0.6 | 2.3% |
| Other | 54 | 7.8 | 66 | 10.2 | 4.9% |
| No Response | 16 | 2.3 | 19 | 2.9 | 0.04% |
| HIGHEST DEGREE | N | % | N | % | Nurse-Related Education N=29,766 |
| Diploma | 201 | 30.6 | 175 | 27.1 | 27.2% |
| Associate | 125 | 19 | 130 | 20.1 | 31.7% |
| Bachelor's | 229 | 34.9 | 213 | 33 | 32.0% |
| Master's | 72 | 11 | 79 | 12.2 | 8.9% |
| Doctorate | 1 | 0.2 | 3 | 0.5 | 0.6% |
| Other | 3 | 0.5 | 10 | 1.6 | --- |
| No Response | 26 | 4 | 35 | 5.4 | 0.1% |

Source: Data from "The Registered Nurse Population, Findings from the National Sample Survey of Registered Nurses, March 1996", Division of Nursing, Bureau of Health Professions, Health Resources and Services Administration, Department of Health and Human Services, 1997.

Table 2 is a national sample survey of RN's conducted in 1996 by the Department of Health and Human Services, shows the Connecticut nursing demographics from a different perspective. Comparing Connecticut statistics to the rest of the nation, shows a higher average age of 45.1, a lower percentage of overall nurses employed, a much lower percentage of those employed working in an acute care setting, but a more educated population as a whole.

State Trends Among Licensed Nurses

More recent statistical information of current trends of licensed nurses within Connecticut over the last four years shows the following:

Table 3. Profile of Licensed Nurses in Connecticut

| TYPES OF LICENSED NURSES | 1996 LICENSES | 1997 LICENSES | 1998 LICENSES | 1999 LICENSES |
|--------------------------|---------------|---------------|---------------|---------------|
| Advanced Practice | 1,130 | 1,384 | 1,599 | 1,932 |
| Registered Nurses | 983/140 | 1,209/175 | 1,407/192 | 1,665/267 |
| Licensed Nurse | 117 | 127 | 133 | 142 |
| Midwife | 100/17 | 103/24 | 112/21 | 121/21 |
| Licensed Practical | 11,501 | 11,185 | 11,049 | 11,059 |
| Nurse | 9,946/1,555 | 9,676/1,509 | 9,657/1,392 | 9,624/1,435 |
| Registered | 48,342 | 48,778 | 49,312 | 49,769 |
| Nurse | 39,568/8,774 | 39,761/9,017 | 40,700/8,612 | 40,364/9,405 |
| TOTALS | 61,083 | 61,474 | 62,093 | 62,902 |
| (In state/Out of state) | 50,597/10,486 | 50,749/10,725 | 51,876/10,217 | 51,774/11,128 |

Data source: Connecticut Public Health Department 1999

Table 3 indicates the number of licenses held in Connecticut over 4 years, first by total per year, then separated out by instate/out of state. The licensure data in Table 3, available from the State of Connecticut Department of Public Health (DPH), is now being collected in more detail. As of 1999, the DPH has been categorizing licensure demographics by country within the state.

- **APRN's:** The number of advanced practice registered nurses licensed in Connecticut has grown significantly over the last four years with a rise in those nurses now living out of state.
- **LPN's:** The number of licensed practical nurse residing both in state and out of state appears to be on the decline in Connecticut. This trend is also seen within the states acute care hospitals. Interviews with nurse executives revealed that many of the remaining roles for LPN's within their facilities have shifted into outpatient or patient care assistant roles, or have been eliminated altogether.
- **Registered Nurses:** The number of licensed nurses in Connecticut has increased slightly over the past four years, but this number is somewhat misleading. Because advance-practice nurse and licensed nurse midwives are included in the RN numbers, APRN and licensed midwives should be subtracted from the nursing numbers to eliminate double counting. By taking out these dual licensed nursing numbers, the number of instate registered nurses qualified to practice at a staff role has actually declined.

Future Demand For Registered Nurses

Given the trends in nursing supply within Connecticut, what is the related demand for nurses in the future? To answer that question, nursing specific variables that have an impact on today's working professionals must be explored.

Perceptions of RN Job Cuts

Hospital financial crises and related redesign and restructuring efforts going on across the country have contributed to the perception of job cuts for those in the RN role. Many believe this perception has begun to influence people making decisions about nursing as a career.

Future Employment

Interviewed nurse executives continue to predict a growing demand for RN's. An aging baby boom population, coupled with a rising median age of the bedside caregiver, along with declining nursing school enrollments, compounds the job situation for nurses. This raises concern from hospital executives that they will have increased difficulty hiring nurses.

This concern is echoed by a bulletin released by the American Association of Colleges of Nursing (AACN) in April 1999, predicting that the demand for acute care nurses is rising rapidly after a period of hiring freezes and budget cuts in recent years. This demand, coupled with the country's aging population is straining the available resources, with the shortage predicted to get worse.

Education Issues

The AACN bulletin also highlights trends within the last several years in undergraduate nursing programs, citing shrinking national school enrollment. Data trends show nursing enrollment in entry level Bachelor of Science (BSN) programs dropped by 6.6% in 1997 and by 5.5% in 1998. These numbers are part of a four-year trend of declining enrollments.

Faculty Shortage Seen in Nursing Programs

Also contributing to the nursing shortage are declining numbers of doctorally-prepared nursing faculty. Out of the estimated 9,000 faculty teaching in the nation's AACN member nursing schools, only a little more than half have their doctoral degree. This number, coupled with a sharp decline in masters prepared nursing students going into academic careers, along with the rise in average age of current faculty to 49, promises to lead to a greater shortage when those faculty reach retirement age in 10 years. An informal poll by the AACN showed that 64 of the 159 member schools reported that faculty recruitment difficulties was having an effect on the school's ability to increase enrollment numbers.

According to AACN, other barriers contributing to inadequate faculty numbers include:

- Competition from clinical and private sectors because of comparatively low salaries;
- Small numbers of doctorally prepared faculty willing and qualified to teach; and
- Difficult working conditions in hospitals related to more complex and demanding acute care clinical experiences.

Solutions being proposed to address this issue include:

- Creative recruitment and retention packages for faculty;
- Creative solutions to increase enrollment for students including:
 - Compressing education time including fast track programs;
 - Financial incentives for students and faculty; and
- Participation in advocacy efforts to increase federal funding for research and nursing education.

Current efforts to resolve nursing education problems include:

- Increasing appropriations for the Nurse Education Act (Title VIII of the Public Service Act) to \$74 million for FY 2000; and
- Increasing the \$70 million budget for the National Institute of Nursing Research (NINR), which currently has one of the smallest funding bases of all entities within the National Institutes of Health.

Career Opportunities For RN's

Growing career opportunities away from the bedside also contribute to the staff nursing shortage. Managed care, information technology, and pharmaceutical opportunities often provide more flexible schedules, less work-related stress and frequently better salaries along with opportunities for bonuses and stock options.

How do these supply and demand trends affect quality within today's acute care setting? Can patient outcomes be scientifically linked to the nursing role?

QUALITY CARE INDICATORS AND TRENDS

Research On Staffing Ratios and Quality of Care

There has been little published in the past on the linkage between patient outcomes and hospital and nursing performance. As demand for objective measures of health care quality grow, so has the number of report cards developed. While many of these report cards have focused on just a few core quality indicators such as length of stay or mortality, the role of nursing and its link to patient outcomes has not been well studied. Quality indicator data is abundant but is difficult to analyze especially since the lack of standardization and centralization has kept its study fragmented.

National Database Of Nursing Quality Indicators (NDNQI)

At the national level, another initiative addressing the quality of care and patient safety discussions that has arisen from the ongoing changes occurring within the current health care delivery environment is the NDNQI. The National Database of Nursing Quality Indicators (NDNQI) is part of the “Safety & Quality Initiative,” a project of the American Nurses Association (ANA) discussed earlier in this report.

The NDNQI project will help to quantify the role of nursing interventions within the area of patient outcomes. Some hospitals across the country including Hartford Hospital are voluntarily submitting data to the database for purposes of this project. This ANA funded project builds on the work completed within seven state nurses associations related to data collection of nursing sensitive quality indicators. Data collection efforts are in place through the state nurse associations in over 100 hospitals in Arizona, California, Minnesota, North Dakota, Ohio, Texas, and Virginia, and are now expanding to individual hospitals.

This project data is gathered through the “Center for Nursing Quality” using the Midwest Research Institute (MRI) and the University of Kansas School of Nursing as the facilitators and consultants. Analysis includes collection of 10 core quality indicators. The indicators include:

- Skill Mix of RN’s, LPN’s and Unlicensed Staff;
- Total Nursing Care Hours Provided per Patient Day;
- Maintenance of Skin Integrity (Pressure ulcers);
- Patient Injury Rate (falls);
- Patient Satisfaction with pain management;
- Patient Satisfaction with educational information;
- Patient Satisfaction with overall care;
- Patient Satisfaction with nursing care;
- Nosocomial Infections; and
- Nursing Staff Satisfaction.

Hartford Hospital Nursing Outcomes Report

At the local level, one of Connecticut's area hospitals is setting an example for other hospitals to follow with its approach to a comprehensive measurement tool. In 1998, Hartford Hospital published its first Nursing Outcome Report. This report, now in its second year of publication, is a look at Hartford Hospital's department of nursing's outcomes from the previous year. The report has been modeled after the American Nurses Association (ANA) concept of creating a "report card" that measures nursing's contribution to quality patient care. Over the last several years, the ANA has been working on developing a Nursing Report Card that could demonstrate the relationship between patient care outcomes and nursing staff related demographics and actions. Although the empirical data showing a definitive link between quality of care in nursing and patient outcomes is still in its infancy, the work as demonstrated in this report is moving forward in an attempt to bridge the gap within this area of health care research.

The Hartford Hospital nursing outcome report contains the following information:

Demographics/Nursing Profile including components related to:

- Caregiver skill mix;
- Years of experience in licensed roles;
- Years of experience in unlicensed roles;
- Certification among RN's;
- Degrees among RN's; and
- Survey of Nursing Perception of Professional Practice Implementation;

Nursing Outcome Indicators divided into four components including:

- Clinical: includes outcomes indicators such as IV site infections, patient falls, decubitus ulcers, and urinary track infections;
- Functional: includes discharge teaching and home health care communication analysis;
- Financial: includes skill mix, RN hours per care day, and total staff hours per day; and
- Satisfaction: includes aggregate survey information from internal hospital satisfaction tool for indicators such as measures of patient perception of pain control, recommendation of hospital to others, and perception of overall care received during stay.

This report summarizes at an organizational level a majority of the demographic and quality of care information needed for further study on the issue of nursing staffing patterns and links to quality of care in the hospital setting. Many of the nursing outcome indicators are also those designated by the American Nurses Association (ANA) to be tracked at the national level within their national database. If the type of statistical information contained within this report was collected by other Connecticut hospitals and was aggregated on a regular basis, it would help to begin to form a picture of current trends in the area of nursing and acute care quality.

CONNECTICUT'S ACUTE CARE HOSPITAL ANALYSIS

In an attempt to compile state aggregate data to assess the situation for Connecticut acute care hospitals, an Office of Health Care Access (OHCA) survey was drafted to collect data for the purpose of aggregating variables to identify patterns and trends.

In November 1999 OHCA made a request for information in the form of a survey. The goal of the survey was to enable OHCA to conduct a preliminary analysis of the current demographic and market trends within the state. The aggregated information generated from all 31 acute care hospitals that participated in the survey is analyzed below. For purposes of data aggregation and analysis, the data were grouped into several category types including groupings by hospital size and teaching status.

The survey was divided into four main components:

1. Structure;
2. Staffing;
3. Quality Indicators; and
4. Nursing Labor Market.

Organizational Structure Data

Areas of Responsibility

Areas of responsibility, scope of clinical areas and organizational structures vary dramatically among the 31 Connecticut acute care hospitals. The role and scope of the senior nursing executive as either the Vice President for Nursing or Vice President of Patient Care is dependent upon the role that nursing plays within the infrastructure of the individual organization.

Staffing Decision Making

When asked to describe day to day staffing level decisions and how they are made on a given hospital unit, practice also varied dramatically among Connecticut hospitals. The responses regarding the decision making process ranged from a one sentence directive to a nine page detailed staffing protocol. The common variables used by the majority of hospitals to make staffing decisions are census, acuity, and skill mix.

Roughly half of the Connecticut hospitals use some sort of an acuity tool to measure the variables that contribute to determining how sick the patient is and how much care may be required. Looking at the current literature and research done on the subject to date, many hospital staff nurses feel that, like mandated ratios, many of the acuity systems are ineffective or manipulated and do not address the core challenges of effectively predicting hours of care needed. Many nurses feel that an acuity tool does not capture many of the patient care activities taking place because such a tool works on a principle of averages.

Nursing Model

Of the 31 acute care hospitals responding to the question on their nursing management strategy or model of nursing care delivery, response was mixed. The structure in which care providers are assigned to patients also varied based on individual unit within a hospital.

The distribution in terms of types of Nursing Models used by Connecticut hospitals were:

- Primary nursing: 5
- Team nursing: 2
- Care Partners: 4
- Other: 15
- Combination: 5

It was difficult to draw conclusions regarding trends in Connecticut’s nursing care delivery models as the responses and individual interpretations of the definitions of each model were mixed. Hospitals reporting a “combination” model had a mix of models that varied depending on the clinical unit.

Unionization Statistics

- Nineteen of the 31 hospitals reported that their nursing staff works in a non-unionized environment.
- Six of the 12 unionized hospitals reported having an “open shop³.”
- The other six unionized hospitals reported having a “closed shop⁴.”

Teaching Program Affiliation

Training future nurses is a vital component in addressing the nursing supply issue. A majority of Connecticut hospitals, 27 out of 31, have an affiliation agreement with a nursing school or university teaching program.

New Graduate Orientation and Nursing Orientation Programs

Having a comprehensive orientation program for newly graduating nurses just entering their first staffing assignment is a critical component in successful transitioning to a new role. How comprehensive the orientation program is impacts staffing turnover, quality of patient care, and overall staff satisfaction. All 31 hospitals reported having a nursing orientation program. The type and length of the orientation program varied dramatically from a week, up to 18 weeks. Most hospitals tailored the orientation program to fit the needs of the individual nurse based on experience, readiness to progress and preceptor assessment of clinical competency.

³ Those allowing its members to join the union or elect not to join

⁴ Union membership is required to work

Staffed vs. Licensed Beds

There are currently 9,210 licensed acute care beds⁵. Of the total licensed beds in Connecticut, only 65% (5965/9210) were staffed in 1999. In interviews with nurse executives, several mentioned that during the winter season during periods of high census there is frequently an issue of having available hospital beds, but not having the staff to care for the increased number of patients. Even though hospital bed utilization is down overall, the limited supply of nursing staff has had a direct impact on Connecticut hospitals causing some patient transfers by those hospitals lacking the staff to accommodate the higher winter census fluctuations.

Staffing / Labor Demographics

Staffing FTE's by Care Giver

As part of the survey, the hospitals all provided full time equivalents (FTE's) by provider type. The data analysis however, was inconclusive because the numbers by hospital varied significantly. Having a total FTE count without census numbers and accounting for nonproductive time could be misleading. In order for further analysis to be done in this area, these variables would need to be adjusted in order to draw specific conclusions.

Skill Mix

Average total skill mix for the state's acute care hospitals for FY 1998 was 76.5% registered nurses as compared to 23.5% unlicensed staff. Non-teaching hospitals had a higher FY 1998 skill mix, at approximately 80:20. Conversely, teaching hospitals had a lower skill mix of 74:26, where the use of students to supplement staffing is more prevalent.

For a detailed look at these numbers broken down by hospital type and teaching status, please refer to Table 3 and 4 in the Appendix.

Average Hours of Direct Care Provided

Thirteen out of 18 or 72% of responding hospital reported that they do not track average hours of direct care provided.

In the past the Hours per Patient Day (HPPD) unit of measure was widely regarded within the health care industry as the standard unit of measure from which to benchmark unit productivity. Studies by the ANA in recent years call this statistical measure into question, with recommendations for a change in the industry to a more unit based measurement tool. The HPPD statistic continues to be used by health care consulting firms across the country. The firms use this statistic in redesign and reengineering efforts when nursing productivity is measured for opportunities to trim patient care staff depending on where the hospital falls relative to industry standard.

⁵ 2000 Department of Public Health licensure data

Nursing Shift Standard

While many of the hospitals are still using eight-hour nursing shifts as their standard, a combination of eight and twelve-hour shifts are becoming a standard used by nine Connecticut hospitals. Twelve-hour shifts gained in popularity in the past as a recruitment tool providing more time off between shifts making as an attractive job benefit. The twelve-hour option also offers continuity for a few types of patient care areas such as labor and delivery where the same nurse is assigned for a longer duration in a single episode of care.

Consecutive Hours/Shifts Requirements for Nurses

Twenty-four, or 77% of the 31 hospitals surveyed reported that nurses may be asked to work up to 16 consecutive hours. The remaining seven hospital responses varied from eight to 18 hours as the consecutive length of time a nurse may be required to work in a day. (See Table 6 in appendix for details) Consecutive hour issues become significant in two types of situations, voluntary and mandatory overtime. Both types of overtime are related to a staffing supply and demand issue. Overtime occurs when there is a change in patient census, acuity, or staffing requiring more staff than originally projected for. Depending on the protocols in place within a hospital, once internal part time and supplemental staffing pools are exhausted as a means for additional staffing, a request is made for existing full time staff to work additional hours. While this “voluntary” overtime can alleviate most of the staff variances, some hospitals have moved to “mandatory” overtime, where in times of extreme shortage, a nurse is “required” to work additional nonscheduled hours. Some caregivers worry that with a growing nursing shortage this type of staffing requirement will become more prevalent.

Use of Traveling Nurses

A majority of Connecticut hospitals use “Outside Agency” and “Traveling” nurses to supplement in-house nurse staffing pools in times of shortage. While this type of staffing is usually used for predictive periods of short staffing such as planned maternity leaves and seasonal periods of rising hospital census, agency or in-state nursing pools have experienced growing requests from Connecticut hospitals for unplanned shortages as well.

Agencies Used for Supplemental Staffing

There are a quite a few agencies used by Connecticut hospitals for travelers and supplemental staffing needs, including such agencies as Cross Country Staffing, TravCorps, Starmed, American Mobile Nurses, Clinical One, MED Staff Inc, Staff Relief, Pro Care, Optimum Staffing, Nurses Rx, and Health Tour. Many agencies have sprung up over the last few years because of growing demand for licensed care givers nationwide. Agencies can attract additional caregivers willing to travel the country through housing, bonuses and enticements of working in a different climate. Based on survey responses, this type of supplemental staffing is critical for many Connecticut hospitals to get through predictable shortages in times of need.

Private Duty Nurse Frequency

When asked to give utilization statistics on numbers of patients using a private duty nurse while hospitalized, answers ranged from zero to 58 episodes over a one-year time period. While most hospitals do not track this number, some reported a rise in family interest in this type of private contract for a private duty nurse, particularly when a family member was unable to stay with the patient.

Private Duty Nurses Help

For those patients and families desiring to contract with a outside private duty nurse to supplement the inpatient care being given, 39% of hospitals offer services that include helping patients find a private duty nurse. All but one of the 12 hospitals that offer the services are teaching hospitals, where nurse to patient ratios are statistically lower but have supplemental student help. It should be noted however, that private duty nurses, if hired, may only provide comfort measures and not other licensed care activities while the patient is hospitalized.

Continuing Education for Staff Nurses

Although all 31 hospitals provide continuing education to their staff, the content of the classes vary significantly, as do the annual hours of education provided. Currently Connecticut does not require any annual continuing education to renew a registered nursing license. While most hospitals have some measures in place to measure competency of a new hire, such as giving a medication test, very few have annual competency tools in place to ensure knowledge is kept current in the field. Some states have mandated continuing education units (CEU) as a requirement to licensure renewal as a means to ensure that some updated education and training has been received within the last year.

Tuition Reimbursement

All 31 Connecticut acute care hospitals offer tuition reimbursement to nursing staff. Average annual tuition reimbursement paid by the hospital equals \$1,615 per year. The spread within the range however, is from \$300 per year up to a maximum of \$3,000 per year per full time employee.

Other standardized criteria related to tuition reimbursement and education for staff in Connecticut hospitals include:

- Prorated reimbursement for part time staff;
- A course grade of C or better, with a grade of B or better required for a few organizations for reimbursement upon course completion;
- Courses must be job related; and
- Prior approval of reimbursement before class begins.

Benchmarking / Quality Indicators

Patient Satisfaction Measures

All 31 hospitals have some mechanism to measure patient satisfaction. Seventeen out of 31 hospitals use the external vendor Press Ganey⁶ to analyze patient satisfaction. Seven hospitals use their own internal satisfaction tool. The remaining seven use a variety of external vendors including:

- Gallup Survey;
- National Research; and
- Solution Point.

Nursing Quality Indicators

In order to continue to pursue scientific study of the relationship between staffing ratios and quality, more data needs to be collected. Although only two Connecticut hospital reported participation in the national ANA quality initiative based on the survey results, many more hospitals within Connecticut could participate with little additional effort. It appears that many hospitals are already currently collecting quite a few of the ANA variables. Below are the ANA variables, along with the numbers of Connecticut hospitals already collecting this data internally.

- Skill Mix: 31
- Total Nursing Care Hours
Provided per Patient Day: 17
- Skin integrity/ Pressure Ulcers: 12
- Patient Injury Rates/Falls: 17
- Patient Satisfaction: 31
- Nosocomial Infections: 9
- Nursing Staff Satisfaction: 2
- RN Education: 30
- Nurse Staff Turnover: 8
- Use of Agency Nurses: 31
- Medication Errors: 11

⁶ A widely available patient satisfaction tool used nationally by the health care industry

Nursing Labor Market Supply and Demand

The survey also asked for suggestions from nurse executives on addressing the nursing supply issue.

The summary of ideas include:

- Providing tuition reimbursement/college scholarships;
- Developing partnering/mentoring programs in high schools and middle schools;
- Improving media perception of nursing;
- Using Internet based recruitment strategies for nursing;
- Examining pay structure;
- Restructuring curriculum to include more clinical training;
- Standardizing nursing education programs;
- Providing incentives and salaries comparable to the business sector;
- Beginning initiatives to look at nursing as a second career;
- Loosening restrictions surrounding the recruitment of foreign nurses;
- Providing cross-state licensure;
- Offering scholarships; and
- Offering child day care.

While many of the hospitals have taken steps to implement some of these ideas within their purview, many of these suggestions are broader initiatives that are being addressed on a more global level through some of the state and national professional organizations.

The survey data collected from the 31 acute care hospitals reflects a similar finding to state and national data collection trends. Some data variables are extremely limited for purposes of ongoing trend analysis and timeliness is frequently an issue. Available data lacks standardization, which severely limits comparison and conclusive cause and effect analysis. What is significant however, is that there is a great deal of data collection and monitoring activity going on at the local hospital level here in Connecticut. The next step is bringing this data together in an aggregated fashion to scientifically study how the variables relate to determine conclusively the relationship between staffing levels and patient care outcomes.

With this limited perspective on the Connecticut acute care environment, it is important to look at what other states are doing to address the health care quality and staffing issues. Upcoming national legislation may also impact how the state moves forward to address the issue.

LEGISLATION AND INITIATIVES

National Trends

The quality and staffing debate continues, but looking at the growing initiatives and recent legislative activity, the country is moving forward in an attempt to address the issue.

Nurses for a Healthier Tomorrow

In September 1999, 16 national health care and nursing organizations joined together to form a coalition to promote nursing. With growing concern over the national nursing shortage, the coalition, “Nurses for a Healthier Tomorrow” kicked off a fund raising drive to raise at least \$1 million dollars to help underwrite a national advertising campaign. The campaign is aimed at recruiting new nurses and encouraging existing ones to remain in the profession. The coalition is also working to help educate decision-makers about the value of nursing within health care.

AMA’s National Patient Safety Foundation -- Request for Proposals

In 1997, the American Medical Association launched the National Patient Safety Foundation (NPSF), a non-profit education and research foundation. The Foundation’s main initiative is to improve health care safety by studying errors within the system and implementing safeguards to prevent patient injury.

One of the top priorities of the NPSF is a focus on research. In January, 2000, there was a call for letters on intent to conduct research and development in patient safety. It is anticipated that at least \$400,000 in grant awards of \$100,000 per project will be distributed by the end of this year.

Current Legislation

On the national legislative front, two proposed bills are currently being studied.

Patient Safety Act HR 1288/S966

Background and History:

There has been increased and growing public concern expressed regarding the quality and safety of services provided by health care facilities and institutions, as such facilities have instituted aggressive efforts to reduce levels of staff who provide direct patient care services as a principal means of decreasing expenses. A growing body of data suggests a linkage between the number and mix of nursing staff and positive patient care outcomes, including the avoidance of patient death and injury.

Many employees of health care facilities have expressed fear for their employment if they report unsafe conditions, including violations of State or Federal law. Unprecedented consolidation among health care institutions has led to increasing concern regarding the effect of such activity on the health and safety of communities served by these facilities. The Federal government however, has little authority to evaluate such effects in deciding whether or not to approve mergers and acquisitions among health care facilities.

On March 25, 1999, in the 1st session of the 106th Congress, U.S. Rep Maurice Hinchey (D-NY) introduced H.R. 1288 as a bill in the U.S. House of Representatives. On May 5, 1999, Sen. Harry Reid (D-NV) introduced a companion bill S.R. 966 in the Senate. Currently, the two bills have been referred to respective subcommittees of the House and Senate for further review.

The bills, originally drafted by the American Nurses Association (ANA) as part of their “Every Patient Deserves A Nurse” campaign in a response to the health care quality issues across the country, are known as the “Patient Safety Act of 1999.” They have three main components.

- **Public information disclosure:** requires providers to disclose staffing and performance data in order to promote improved consumer information and choice.
- **“Whistleblower” protection:** designed to protect employees of Medicare providers who report concern about the safety and quality of services provided by Medicare providers or who report violations of Federal or State law by those providers.
- **Health Care Industry Mergers and Acquisitions:** requires review of the impact on public health and safety of proposed mergers and acquisitions of Medicare providers.

Purpose of the Bill

Known as the Patient Safety Act of 1999, the act requires providers under the Medicare and Medicaid program, as a condition for continued participation in the program, to make publicly available⁷ certain minimum information, in addition to information specified by the Secretary of Health and Human Services, regarding nurse staffing and patient outcomes.

⁷ “Publicly available” means, with respect to information of a provider, information that is:

- a) provided to the Secretary and to any State agency responsible for licensing or accrediting the provider;
- b) provided to any State agency which approves or oversees health care services delivered by the provider directly or through an insuring entity or corporation; and
- c) provided to any member of the public which requests such information directly from the provider.

Requirements of the Bill

Public Disclosure of Staffing and Outcomes Data (Sec. 4)

Under Section 4 of the act, any provider under the Medicare program shall, as a condition of continued participation in such program, make publicly available information regarding nurse staffing and patient outcomes as specified by the Secretary. Such information shall include at least the following:

- number of registered nurses providing direct care;⁸
- numbers of unlicensed personnel utilized to provide direct patient care;
- average number of patients per registered nurse providing direct patient care;
- patient mortality rate;
- incidence of adverse patient care incidents; and
- methods used for determining and adjusting staffing levels and patient care needs.

Protection Of Certain Activities By Employees Of Medicare Providers (Sec. 5)

The act prohibits Medicare providers from terminating or taking adverse action against any employee or groups of employees for certain actions, including those taken for the purpose of notifying the provider of conditions potentially dangerous or injurious to patients receiving services from the provider or to employees of the provider. It requires provider suspension from participation in Medicare for taking such an adverse action.

Evaluation Of Health And Safety Of Mergers And Acquisitions (Sec. 6)

The third part of the act addresses mergers and acquisitions in the health care industry. Health care institutions seeking to merge or acquire another institution would be required to report to the Secretary of the Department of Health and Human Services information regarding the overall impact of the merger or acquisition on the community. In particular, institutions would have to report the impact on the availability and accessibility of:

- primary, acute care, and emergency services;
- services for mothers and children;
- services to the elderly;
- services to other specific populations, including the poor, the uninsured, ethnic minorities, women, the disabled, and the lesbian and gay communities;
- specialized services, including services for the prevention, detection, and treatment of the human immunodeficiency virus and related illnesses, mental health services, and substance abuse services;
- and
- social services and other services within the community.

⁸ This information shall be expressed both in raw numbers, in terms of total hours of nursing care per patient (including adjustment for case mix and acuity), and as a percentage of nursing staff, and shall be broken down in terms of the total nursing staff, each unit, and each shift.

Other required reportable information would include:

- safety and quality of health care services to be provided, including anticipated changes in numbers and mix of nursing and other patient care staff and on other factors related to patient outcomes;
- overall employment within the community;
- provider workforce statistics, including:
 - (a) the status of existing collective bargaining contracts, if any; and
 - (b) plans for retraining and redeployment of employees who are displaced as a result of the contemplated transaction.

While initiatives and bills continue to move forward at the national level, some state governments are acting even more swiftly in their attempt to address the quality issues. Late last year, California moved forward with their solution to the quality staffing issue by becoming the first state to pass legislation on patient ratios.

California AB- 394

Purpose of the Law

Legislation signed into law on Oct 10, 1999 in California sets minimum nurse - to- patient staffing ratios in general acute care, psychiatric and specialty hospitals and limits the nursing related duties of unlicensed personnel.

History

California was the first state in the country last year to mandate minimum nursing staffing levels. This bill was amended late in the session when the specific ratios originally mandated were deleted. The earlier version had required 1:2 ratios for critical-care, emergency, burn, labor and delivery and postanesthesia care units. The bill had also required a 1:3 ratio for intermediate care and pediatric units with a 1:4 ratio for specialty care and telemetry units. Ratios of 1:6 were previously mandated for general care areas including transitional inpatient and subacute care units. Under the final ruling, California Department of Health Services has until January 1, 2001 to issue regulations that will set minimum, specific and numerical license nursing ratios by hospital unit. In signing the bill, Governor Davis reached an agreement with the bill's author Sheila Kuehl to delay the implementation schedule by one year to January 1, 2002 to give hospitals more time to plan for this change in staffing.

Scope

Staffing Ratios: When establishing minimum patient ratios, the public health department is authorized to take into account the unique nature of the University of California teaching hospital as an educational institution and provide "flexibility" for rural acute facilities. The regulations must be reviewed five years from their adoption with any proposed changes needing to be reported to the legislature. The regulations adopted by the department are not meant to replace the existing nurse to patient ratios that already existed for the intensive care units, neonatal units and operating rooms and ratios previously established for the State Department of Health.

Patient Classification Systems: In addition to the ratios that constitute *minimum* number of registered and licensed nurses allocated, additional staff that are needed are to be assigned in accordance with a documented “patient classification system”. This patient classification system (PCS) must be used to assist in determining the patient nursing care needs. The system must incorporate an assessment made by the current RN caregiver, the patient care delivery model, the current patient requirements including severity of illness, technology and equipment needs, complexity of clinical judgement for patient plan management, and licensure of personnel required for care.

Orientation & Competency Validation: The law also addresses staff assignments in patient care areas and requires that they have already completed an orientation and have demonstrated current competence in providing care in the area. Further requirements of the law mandate written policies and procedures for orienting temporary staff including competency validation.

Unlicensed Personnel & Delegation: A third area that the law addressed is the use of unlicensed personnel. The law prohibits hospitals from assigning unlicensed staff to perform nursing functions in lieu of a registered nurse. It also addressed the issue of RN delegation of specific clinical functions to unlicensed staff. The RN is prohibited from delegating tasks that require a “substantial amount of scientific knowledge” or technical skill to the unlicensed care giver including the following tasks:

- Medication administration;
- Intravenous therapy or venipuncture;
- Parenteral /Tube feedings;
- Invasive procedures including tracheal suctioning, and nasogastric tube and catheter insertion;
- Assessment of patient condition;
- Performing “moderate complexity” lab tests; and
- Educating a patient and family on the patient health care issues including post discharge care.

Although California’s solution to the health care quality issue was legislative mandates, many supporters of the original bill feel that these mandates may not have the desired effect on improving patient care. As mentioned earlier in the report, the use of hours per patient day (HPPD) as an industry productivity measure does not incorporate many other variables and lacks significant scientific support as an effective unit of analysis to project staffing.

Other States' Experience: History and Trends through the Years

In 1994 the professional nurses' organization, ANA launched one of several initiatives beginning an investigation into the impact of health care restructuring and the link between patient outcomes and nursing.

1996 brought task force legislation requested by the Florida Nurses Association that required the state of Florida to study the effects of patient outcomes and nurse staffing. The report called for a collection of nursing quality indicators, an area that had little research at the time with linkages to patient outcomes.

In 1997 five states reviewed bills on nurse sensitive data collection but no bills were enacted.

In 1998 new bills were considered in three additional states but none were passed.

In 1999 10 states introduced 15 new bills for consideration related to nursing quality indicators. The proposed state bills put forth in the last legislative session included:

- Connecticut: Legislation requiring a study on nursing staffing and public health effects;
- Hawaii: Task force to study Quality issue;
- Illinois: A "Patient Advocacy Act" requiring "appropriate skill mix;"
- Massachusetts: "Act Relative to Public's Right to Comparative Nursing Care Data;"
- Minnesota: Requirement for data collection on quality nursing care from acute care, sub-acute and outpatient care facilities;
- New York: Regulations mandating disclosure of nursing quality indicators;
- Ohio: Requirements for reporting designated health indicators; and
- West Virginia: Legislation requiring Medicare providers to disclose patient outcomes and nurse staffing numbers.

Current Legislation by State

Across the nation, looking at more in depth initiatives going on in individual states, five states have moved forward with specific solutions in their attempt to address the quality staffing concerns.

New Mexico: In 1999 the state of New Mexico passed a law appropriating \$150,000 from the New Mexico board of nursing fund to the board of nursing expenditure in fiscal year 1999-2002 for continuation of a state-wide assessment of nursing needs. This contract was for the continued statewide study on the need for additional nurses and the types of education and training necessary to meet their state health care demands.

Minnesota: During the first six months of last year, Minnesota Nurses Association commissioned a study through a grant from the American Nurse Association called "Concern for Care." This study of nursing trends in acute care settings released at their 94th annual convention in October describe an environment where nurses contend that current formulas used to determine staff to patient ratios are neither accurate nor comprehensive. The report identifies recommended actions that could be taken to address concerns over safe staffing levels. Ideas include convening a statewide forum to explore the relationship between nurse practice and staffing issues. The study also points to other work done in the field, including resources by the American Nurses Association citing their work recently published on "Principles for Nurse Staffing."

Kentucky: House bill 591 introduced and signed into law by the governor in 1998, requires all licensed facilities to have a methodology to calculate staffing. This law also requires a facility policy that provides for an "appropriate mix of licensed and unlicensed personnel."

Arkansas: The Arkansas General Assembly recently passed a resolution to do a interim study on the shortage of RN's and nursing educators. The purpose of this study was to develop "recommendations for appropriate statutory changes" to be brought forth for the 2001 legislative period.

New Jersey: A regulatory change in 1998 required each hospital to have a staffing plan to address nursing staff requirements and patient care needs. Minimum requirements include having at least one registered nurse for each unit for every shift with at least 65% of average inpatient direct patient care hours being provided by licensed staff. The regulation change also required a systematic method of assessing objective criteria including measuring variables related to training of staff, case mix and acuity measurement, diagnostic and length of stay data. New Jersey hospitals are also required to have a plan to address critical departures from staffing plans.

Legislative Activity for 1999

Overall, legislation was proposed in more than 25 states this past year on subjects related to health care, nursing, and quality including areas addressing nursing quality indicators, sufficient staffing and staffing ratios, whistleblower legislation, worker identification, and safe nursing care assignments. California was the only state to pass legislation on mandated staffing requirements as a solution to address the health care quality issue. The "Patient Safety Act of 1999" is one of the major legislative initiatives at the national level, however, is it still under review in sub committee. There should be more discussion on the health care quality issue when President Clinton addresses the nation later in January when his commissioned task force makes their recommendations on addressing the recent IOM findings related to medical errors.

RECOMMENDATIONS

In reviewing the historical work regarding patient care outcomes and their link to nurse staffing and quality of care, as well as recent state and national initiatives, the empirical data in this area continues to grow. Even with the growing amount of research however, one of the primary difficulties encountered is the lack of standardized data with which to look at specific variables linked by research between nursing and quality. One of the major recommendations identified within all the work done to date in this area is to call for standardization in quality indicator data definitions and collection. In reviewing the literature on the subject, conducting interviews and surveys from all acute care hospitals and summarizing the findings in this report, the following list represents a summary of the recommendations going forward:

- Further research on the subject including strong recommendations for area hospital participation in current local, state and national quality data collection through their current quality departments.
- Development of a single tool for collecting and analyzing staffing with linkage to patient outcomes with specific variable data definitions to ensure standardized data.
- Linking data collection efforts between acute, long-term care, and home care where there are similar issues and variables to gain additional data volume.
- Exploration of partnerships with higher education institutions and organizations to identify strategies to increase recruitment and retention within the nursing field.
- Inclusion of specific nurse quality outcome variables in data elements within national and state data collection activities.
- Heightened attention addressing adequacy of nurse staffing issues related to low supply and growing demand to ensure safe and quality nursing care. Continue to study Connecticut's environment and relationship between quality and outcomes and staffing patterns in acute care hospitals.
- Making current data already collected within agencies, such as licensure and demographic trends, more widely available and accessible in a standardized format.
- Collaboration on current standardized data collection that could be publicly available in a report card format to determine where each hospital stands in terms of patient care outcomes.
- Ongoing support of ANA recommendations calling for a shift in measurement of staffing through HPPD to unit based measurement (move from industrial model to professional model). Include standardized unit of intensity and nursing measurement tools and continue to re-evaluate and benchmark these indicators.

CONCLUSIONS

It appears that despite recent and growing attention to the quality of care issue in today's acute care hospital environment, there is still progress to be made in discovering scientifically based linkages between quality and nursing. The evidence points toward some linkages between the two, but without further analysis, data standardization and wider data availability, it would be premature to move forward in recommending specific staffing solutions as a means to address the quality of care issue.

The good news however, is that much work has already been done. There are many studies on staffing and quality currently being conducted at the state and national level. These afford Connecticut acute care hospitals the opportunity to partner in a more cohesive effort. The resulting collaboration would be highly desirable both for the benefit of the individual hospital as well as for the overall state and national healthcare improvement effort.

In reviewing the recommendations and suggestions from literature, feedback from the state's hospitals, and this report's findings, it becomes clear that some changes need to be made regarding current data collection efforts. In order for Connecticut to appropriately address this staffing and quality of care issue, all agencies and organizations should agree collectively on a few basic quality of care variables to measure. Since all Connecticut hospitals currently collect and aggregate some variation of such variables, standardized variables could be substituted for the variables now collected, so no additional data collection would be necessary by the hospitals. Once standardized variables are established, collected and aggregated by each hospital, they could be submitted to state and national data collection efforts already in place.

Other agencies involved in health care data collection could also improve the ongoing study effort by providing better access to meaningful aggregate data along with some agreement and standardization on the data needed for collection and more timely availability of this data.

These efforts collectively would enable Connecticut to become more proactive and less reactive to the changing trends in health care affecting Connecticut's citizens and their experiences with the industry. These changes, rather than mandated staffing ratios, would have a greater impact in moving Connecticut forward in pursuit of quality health care excellence.

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- Note: OCHA gratefully acknowledges the contribution from all 31 acute care hospitals for their survey participation.**

APPENDIX/DATA TABLES

Table 4. Skill Mix by Hospital Type

| Hospital Type | Percent Licensed | Percent Unlicensed |
|-----------------------|------------------|--------------------|
| Non-Teaching Hospital | 79.6% | 20.4% |
| Teaching Hospital | 74.0% | 26.0% |
| Total | 76.5% | 23.5% |

Source: Responses to the Connecticut Office of Health Care Access Request for Information on Nurse:Patient Ratio Study.

Table 5. Skill Mix by Hospital Size

| Hospital Size | Percent Licensed | Percent Unlicensed |
|--------------------------------------|------------------|--------------------|
| Large Urban Hospital | 72.3% | 27.9% |
| Medium Sized Urban Hospital | 72.8% | 27.2% |
| Small Urban/Large Community Hospital | 80.4% | 19.6% |
| Small Community Hospital | 79.9% | 20.1% |
| Unique Hospital | 79.0% | 21.0% |
| Total | 76.5% | 23.5% |

Source: Responses to the Connecticut Office of Health Care Access Request for Information on Nurse:Patient Ratio Study.

Table 6. Number of Consecutive Hours Nurses Can Work by Hospital Size.

| Hospital Size | How many consecutive hours/shifts can nurses work? | | | | | Total |
|--------------------------------------|--|-------------|----|----|----|-------|
| | Response Not Provided | Not Allowed | 12 | 16 | 18 | |
| Large Urban Hospital | | | | 5 | | 5 |
| Medium Sized Urban Hospital | | | | 8 | 1 | 9 |
| Small Urban/Large Community Hospital | 1 | 1 | 2 | 4 | 1 | 9 |
| Small Community Hospital | 1 | | | 5 | | 6 |
| Unique Hospital | | | | 2 | | 2 |
| Total Responses | 2 | 1 | 2 | 24 | 2 | 31 |

Source: Responses to the Connecticut Office of Health Care Access Request for Information on Nurse:Patient Ratio Study.