



New Yorkers for Patient
& Family Empowerment

ALL HANDS ON DECK

*The Need for Patients in New York and Their
Loved Ones to Know More About Nursing
Care Staff Levels in Hospitals*

A Policy Report by
New Yorkers for Patient & Family Empowerment

2015

Acknowledgments

This report was researched and written by Suzanne Mattei of New Yorkers for Patient & Family Empowerment, with research assistance provided by Chad Feay, a nonprofit management professional with experience in health education, and legal interns Annamaria Anselmo and Laura Slavin. The writer also received helpful comment on policy analysis from Bruce Boissonnault, Executive Director of the Niagara Health Quality Coalition; Phyllis Eckhaus, a policy analyst and writer; Courtney Morrow, health policy analyst and former Executive Director of Physicians for a National Health Program, New York Metro Chapter; Ann Pappert, journalist and health policy analyst; and Nancy Talbot, health policy writer. The report and conclusions are the product of the author.

CONTENTS

Executive Summary	1
Introduction	5
Background: The Evidence Is Strong That Having Proper Nurse Staffing Levels Saves Lives	6
Part One: Who Is at Risk from Understaffing of Nurses?	11
A. Daily Impacts of Short-Staffing on Everyone Involved: How the Stress Affects Patients, Their Loved Ones and Healthcare Workers.....	11
B. Patients in Short-Staffed Hospitals Face Specific Health Risks – Including Increased Risk of Mortality.....	13
1. The evidence is strong that having sufficient RN staffing saves lives.....	13
2. Other Dangers: Special health risk areas for hospital patients from short-staffing in Both RN care and total nursing care.....	14
(a) Hospital-Acquired Infections.....	14
(b) Hospital-Acquired Pneumonia.....	15
(c) Cardiac Arrest, Respiratory Failure.....	15
(d) Falls.....	15
(e) Other specific Adverse Events in hospitals.....	15
Part Two: Cutting Corners on Safety: The Risks and the Unkown Conditions	18
A. Hospitals in New York Generally Keep Patients and the Public in the Dark About Staffing Levels.....	19
B. The Law and Regulations Intended to Bring Sunlight to Hospital Staffing Ratios Do Not Provide Timely or Sufficiently Useful Information for Patients.....	20
C. Reasons for Concern About Disparities in Hospital Nursing Staff Levels in New York.....	23
Part Three: Finding the Right Number: Areas of Consensus and Variance	26
A. Areas of Consensus in Hospital Staffing.....	28
B. Areas of Greatest Disagreement in Hospital Staffing – Disparate Positions Regarding Staffing Time Needs for Provision of Proper Care.....	29
C. One New York State Public Hospital’s More Open Approach to Nurse-to-Patient Ratios and the Limitations of the data.....	31

Part Four: Measuring Benefits From a Specific Change – The Strengths and Limits of Information from the California Example.....	33
A. Positive Impacts on Specific Health Outcomes Documented for Patients and Nursing Staff.....	34
1. Significant positive impacts on “failure to rescue” rates and on mortality following a complication.....	34
2. Significant positive impacts on emergency room care.....	35
3. Nurses and supervisors perceive overall improvements in care.....	35
4. Significantly reduced on-the-job injuries and illnesses for nurses.....	36
B. Studies Not Documenting Changes in Certain Outcomes.....	36
1. No positive impact found in California data for respiratory failure or post-operative sepsis; anomalous rise in diagnosis of infection may be due to greater detection.....	36
2. Conflicting information within a study on pediatric cardiac surgery.....	36
3. No positive impact on falls and pressure ulcers found yet significance unclear due to choice of baseline and other factors.....	37
4. A finding of no impact on failure to rescue (which conflicts with a later study) does not address a potentially positive implication of its baseline data.....	37
Part Five: The Increasing Cost-Effectiveness of Sufficient Staffing Levels.....	39
A. Cost Savings and Societal Benefits for New York State from Sufficient Staffing Levels.....	39
B. Several Factors Are Increasing the Potential for Stronger Nurse Staffing Levels to Provide Direct Offsetting Financial Benefits for Hospitals.....	40
1. Fewer “Avoidable Adverse Events”	41
2. Fewer “Potentially Preventable Readmissions”	41
3. Fewer Workers Compensation claims.....	42
4. Reduced length of stay and risk of litigation – due to successful prevention of harm...42	
5. Reduced staff turnover costs.....	42
Part Six: Patients Need More Information on Hospital Nursing Staff Levels.....	45
A. The Need for Transparency From Hospitals.....	45
B. The Need for Vigilance: Questions That Consumers Should Ask About Nursing Staff Levels.....	46
Recommendations.....	47

APPENDIX A: SUNY Upstate Medical University Nurse Staffing Data for Selected Units, 1st Qtr 2015

APPENDIX B: List of Journal Articles and Government Reports cited - with hyperlinks

EXECUTIVE SUMMARY

Hospital patients need the care that nurses and nurse aides provide. That is why they are there, rather than at a doctor's office. They need educated, trained and credentialed nurses to observe changes in their symptoms, take blood samples or administer medications as needed, and carry out other tasks to promote health improvement and – if possible – recovery. They also need nurses or nurse aides to respond when they ask for help. And they need to know that the staff are not so overworked that they cannot give full attention to an individual patient's needs or complete important nursing tasks.

A registered nurse ("RN") with a reasonable patient "load" has the time to make careful medical observations, conduct thorough patient assessments, and address patient needs. Other nursing care staff – who may be licensed practical nurses ("LPNs") or certified nurse aides ("CNAs") – with reasonable work burdens have sufficient time to carry out patient care activities. And all of them have a reasonable amount of time to wash their hands properly between such tasks.

A facility with a nursing staff shortage, in contrast, endangers patients, putting them at risk of infection or other physical harm, inadequately treated pain, or even death. And if any patient needs more time, the others are further short-changed.

While some hours of a hospital day may be busier than others, all it takes is one unmanageable hour to lead to a situation of neglect or error.

The pressure to "economize" in hospitals can undermine the quality of nursing care if staff levels become unreasonably low, even if the understaffing conditions are sporadic.

Staffing issues also are affected by other trends in healthcare. Patients are moved out of hospitals more quickly today; those who remain therefore tend to have greater care needs. This increase in patient "turnover" also brings more interruptions and orientation needs. So a nursing staff level (typically measured in terms of the ratio of nursing staff to patients) or a particular mix of nursing skill levels that may have been adequate 10 years ago may no longer be adequate today.

Unfortunately, hospitals currently keep patients – and the public at large – generally in the dark about the staffing levels for nursing care that they maintain and the variations they are willing to tolerate, which is an unacceptable situation. This report describes:

- ✓ The health risks and daily stresses for patients, families and healthcare staff posed by understaffing of nurses in hospitals;
- ✓ How most patients are kept in the dark about hospital staffing ratios in New York;
- ✓ Examples of benchmarks or targets that have been used, or put forward in a rule-making process, for nurse staffing ratios, identifying areas of consensus and variance;
- ✓ How proper staffing may bring greater financial benefits today than in the past;
- ✓ Why hospitals should fully disclose on their websites not only their planned staffing ratios but also the range of actual staffing levels that occur; and
- ✓ Why patients, their loved ones and the community should press for answers about staffing levels that occur at the hospitals that serve them.

Specifically, this report finds the following:

1. Patients in short-staffed hospitals face specific health risks, including increased risk of mortality.

Any hospital patient can be at risk from inadequate nursing staff levels. The daily impacts of short-staffing with regard to nursing care – which may include RNs, licensed practical nurses (“LPNs”) and certified nurse aides (CNA’s) – affect everyone involved, including not only patients but also their family members or supportive friends, as well as healthcare staff. On a daily basis, patients who require particularly attentive and responsive nursing include, but are not limited to, people who need:

- Care tasks related to complex treatment or infection risks;
- Timely pain management or other medication;
- Assistance with mobility or activities of daily living;
- Help with communication challenges such as hearing or speech disabilities; or
- Frequent and careful monitoring of a health condition.

Patients are also particularly vulnerable to nursing shortages if they have no loved one or trusted friend who can spend substantial amounts of time at the hospital. Families and friends are affected by the stress of trying to get their loved one’s unmet needs addressed. Also, nurses themselves suffer fatigue and sometimes work-related injuries under inadequate staffing conditions.

Strong evidence indicates that having sufficient RN nurse-to-patient ratios in hospitals saves lives. An analysis of 28 studies found a consistent relationship between higher RN staffing and lower mortality outcomes, indicating that increasing staff by one RN per patient would save five lives per 1,000 Intensive Care Unit (“ICU”) and medical patients, and six lives per 1,000 surgical patients. In contrast, a unit by unit, shift by shift review of a hospital’s staffing over time found that the risk of patient death rose by 2% for each shift in which RN hours were eight hours or more below target staffing levels.

Studies have also documented specific associations between inadequate RN or combined nursing care staff (RNs, LPNs and CNAs) with certain types of adverse events or outcomes in hospitals, including:

- Hospital-acquired infections (bloodstream, surgical site, urinary tract, respiratory tract and sepsis);
- Hospital-acquired pneumonia (special risk for older adults and infants);
- Cardiac arrest (special risk for people with scarring from a heart attack);
- Respiratory failure, shock and upper gastrointestinal bleeds; and
- Falls (special risk for people with gait instability, urinary frequency or incontinence).

2. Hospitals currently keep patients and the public in the dark about staffing levels.

A comprehensive database of nursing staff levels in hospitals throughout New York is not readily available from any public source. And because most nurses’ complaints are made internally within the hospital, a complete statewide database of complaints about low staffing incidents also does not exist.

There is cause for concern about disparities in staffing. While not representing a scientific sample, four out of six complaints obtained for this report regarding medical-surgical units in one hospital in 2015 alleged RN workloads of 7.5 patients, with the other two complaints referring to workloads of 5.3

and 7 patients per nurse. Similarly, out of six complaints obtained regarding medical-surgical units at another hospital in 2015, one alleged a RN burden of 11.6 patients, two alleged 8.5, and the three remaining alleged 6.4, 7 and 7.2 patients per nurse. This information, and research on disparities in three other states raise concern that significant disparities may exist among our state's hospitals.

Unfortunately, major flaws in the New York State Department of Health's recently-adopted regulations under a State law intended to foster disclosure of nursing staff ratios make it difficult to obtain consistent and useful information. Also, disclosure of the most crucial information – the range of actual nurse-to-patient ratios tolerated by the facility – is not required.

Among New York's 95 largest hospitals (with 200 staffed acute care beds or more), only the Upstate University Hospital in Syracuse was found to post nursing ratio information for its various units. Yet even this information was presented as quartile (three month) averages, so it was impossible to tell how widely the ratio might vary on a daily basis, and it is not audited for accuracy by any state agency. Notably, a complaint to the Department of Labor was submitted in 2014 alleging incidents in which the hospital was not properly providing meal breaks for nursing staff.

4. Among nurse staffing benchmarks used or put forward in a regulatory process, areas of clear consensus and areas of variance exist.

Hospitals regularly make reasoned predictions about staffing needs, unit by unit, for personnel and budget planning purposes. While the federal Center for Medicare and Medicaid Services ("CMS") has recommended general staffing levels for nursing homes with "expected" nursing staff levels for each nursing home based on its resident nursing care needs ("acuity"), it does not do so for hospitals.

Information is scant, but some examples do exist of publicly disclosed efforts to provide reasonable benchmarks for "target" and for minimum staffing levels (a safety floor beneath which staffing levels should not fall). Interestingly, an examination of such efforts reveals significant areas of consensus and variance. The extent of disagreement about staffing in certain types of hospital units may indicate a tendency in the hospital industry to underappreciate the time needed to carry out nursing care tasks.

The areas of greatest consensus tend to involve the hospital units where doctors play a larger and more active role in the work involved. Both hospital and nurse associations as well as policy-makers tend to agree, for example, that nurse staffing levels in operating rooms should be 1 to 1 and in intensive care units should generally be 1 to 2.

The greatest disagreements involve units where nurses take the lead in patient care while doctors may visit only once a day or less often. For a formal rule-making process in California (which established mandatory hospital nurse-to-patient ratios), nurses proposed a ratio in general medical/surgical units of 1 nurse to 3.7 patients and a 1 to 4.5 ratio for psychiatric units. In contrast, the hospital association proposed much wider ratios of 1 to 10 for medical/surgical units and 1 to 12 for psychiatric units.

California's health department adopted rules setting those ratios at 1 to 5 and 1 to 6, respectively. Because its rules were phased in over time and hospitals were at various levels of compliance at the start, measuring impacts has been challenging. Positive impacts have been documented, however, for reducing patient mortality, and for some – although not all – other "nursing-sensitive" health outcomes.

5. The financial benefits of proper nursing staff levels very likely is increasing.

For hospitals that currently have lower levels of nurse staffing, a move to hire more nurses, especially RNs, requires more financial investment in the “frontline” of care. Two factors, however, are increasing the financial benefits of safer care:

- Incentives against “Avoidable Adverse Events” and
- Incentives against “Potentially Preventable Readmissions.”

Medicare and Medicaid no longer cover these occurrences because they are deemed preventable, and sufficient staffing can help. Other benefits linked to sufficient staffing that can help offset costs are:

- Shorter hospital stays (which have better overall reimbursement rates);
- Reduced risk of litigation – due to successful prevention of harm;
- Fewer Workers Compensation claims; and
- Reduced staff turnover costs.

There is currently no comprehensive analysis of cost impacts from increased nurse staffing that includes all of these factors.

6. Patients need more information on hospital nursing staff levels.

The discussion of safe staffing levels often ends up as a dialogue between just two sides – hospitals squaring off against healthcare workers in a labor negotiation. While it is important to have these two parties engaged in the discussion, there is a large interested group missing – the patients whose healthcare is at issue and the family members and friends who care about them. Patients and their loved ones have no role in labor negotiations, and no access to any information disclosed in such discussions. They should have easy access to current facts on staffing levels at their hospital.

RECOMMENDATIONS

Patients should have easy access to information showing that their hospitals have nursing staff levels that ensure quality healthcare. Also, the public should have access to useful information to compare hospital staffing levels. To help fill in the public knowledge gap, this report recommends:

1. All hospitals should disclose and post on their websites both their planned and actual RN and LPN staffing ratios. Hospitals should also post the *range* of actual staffing levels that occur in each unit by shift. This data should be independently audited for accuracy.
2. Hospital patients and their loved ones should ask questions about the nurse staffing level in their hospital unit, shift by shift. They should know whether a healthcare worker caring for them is an RN, an LPN or CNA, and how many patients that person is managing.
3. Community vigilance about hospital staffing should be increased. Public officials and civic organizations should gather information on hospital staffing (using New York’s existing disclosure statute despite its flaws), and also call on healthcare facilities in their local area to provide further transparency.

INTRODUCTION

All is not well in healthcare. Too little has changed since the Institute of Medicine released its shocking report in 1999 titled, *To Err Is Human*.¹ That report concluded that between 44,000 and 98,000 Americans die each year from medical errors – the rough equivalent of the downing of one jumbo jet per day. A November 2010 report by the Inspector General for the federal Department of Health & Human Services found that one out of every seven hospitalized Medicare beneficiaries is seriously harmed in the course of the hospital care, and at least 44% of these events are preventable.² Despite these calls for safety, too little has changed in the daily experience of patients in hospitals and medical centers.

Indeed, the bad news continues. A more detailed calculation released in 2013 estimated that preventable adverse events in hospitals lead to the death of 210,000 to 400,000 patients each year, which would make medical errors the third leading cause of death – just behind heart disease and cancer.³ Here in New York, the Leapfrog Group’s national scoring of hospital quality ranks New York very low, as 38th among the 50 states, with only 18% of its hospitals receiving an “A” grade. Nineteen hospitals received a “D” or “F” grade.⁴ So, while some health care providers and staff have certainly made sincere efforts to improve their safety programs, substantial risks remain and new risks in healthcare continue to arise. The situation is far from under control.

To provide a safe care environment, hospitals must maintain a sufficient level of experienced staff to meet the needs of each unit, and nurses are critical to the frontline of care. The Institute of Medicine, in a 2004 report, declared that nurses have an essential role in patient safety.⁵ As examples, nurses often must:

- Make observations relevant to diagnosis;
- Clean and bandage (re re-bandage) wounds or surgical incisions;
- Provide pain management;
- Administer medications and monitor their effects; and
- Monitor symptoms and changes in condition.

All of these tasks must be carried out thoroughly and safely.

¹ Institute of Medicine, *To Err Is Human* (1999). For links to documents and journal articles cited in this report, see Appendix B.

² Inspector General, U.S. Dept. of Health & Human Services, *Adverse Events in Hospitals: National Incidence Among Medicare Beneficiaries*, OEI-06-09--0090 (Nov. 2010).

³ J. James, “A New, Evidence-based Estimate of Patient Harms Associated with Hospital Care,” *J Patient Safety* 9(3):122-128 (Sept. 2013).

⁴ See The Leapfrog Group’s Hospital Safety Score webpages (accessed 07/27/2015) regarding its Spring 2015 survey results, available at <http://www.hospitalsafetyscore.org/your-hospitals-safety-score/state-rankings> and http://www.hospitalsafetyscore.org/search?findBy=state&zip_code=&city=&state_prov=NY&hospital=&agree=agree

⁵ Institute of Medicine, *Keeping Patients Safe: Transforming the Work Environment of Nurses* (Washington, DC: The National Academies Press, 2004).

A nurse with a reasonable patient “load” has enough time to make careful observations, conduct thorough assessments, address patient needs, help develop more effective discharge plans, and carry out specific care tasks more safely.⁶ Key infection prevention measures for preventing central line-associated bloodstream infections (“CLABSI”), for example, include hand washing before handling the catheter and changing the dressing around the central line immediately whenever it gets wet or soiled.⁷ Similarly, other nursing care staff with reasonable workloads are better able to carry out assigned care duties and comply with hygiene requirements such as hand-washing between care tasks. (Researchers have noted that understaffing, by increasing the work load, may make it difficult to achieve sufficient hand-washing frequency and duration or maintenance of central venous catheters, thus favoring transmission of pathogens.⁸) When hospitals are short-staffed, however, nursing staff carry heavy workloads, responding to multiple needs and demands that can make it difficult to concentrate on an immediate task. This is problematic on any workday, and even more problematic when such a stressed condition persists over time.

The issues can be complicated by changes taking place in healthcare that make hospital nursing more challenging. Patients are moved out of hospitals more quickly today, and the patients who remain tend to have greater care needs.⁹ Also, as explained in Part 3 of this report, increased turnover in patients brings more interruptions and processing work. A nurse ratio that may have been adequate 10 years ago may no longer be so today. As a result, an otherwise good and competent nurse or nurse aide may have more trouble under certain work conditions providing good quality care. And that can be bad news for patients.

BACKGROUND

Hospitals generally deploy nursing care staff at three levels of caregiving and skill, and the balance among these categories of staff depends in large part on the health needs of the hospital patient population. The types of nurses include:

- **Registered Nurses (“RNs”).** RN’s have the authority to assess patients; identify and treat human responses to health problems; provide care supportive to or restorative of life and well-being, including such measures as IV medication, for example; and change the nursing care plan if necessary to meet the patient’s needs. RNs have legal responsibility for provision of care and must assess each patient on every shift and when needed. They implement the medical plan of care as prescribed by the physician and the

⁶ See, L. Aiken, *et al.*, “Hospital Staffing and Patient Mortality, Nurse Burnout, and Job Dissatisfaction,” *JAMA* 288(16):1987-93 (2002).

⁷ See, Andrew Dick, *et al.*, “A Decade of Investment in Infection Prevention: A Cost-Effectiveness Analysis,” *Am J of Infect Control* 43(1):4-9 (Jan. 2015).

⁸ J. Robert, “The Influence of the Composition of the Nursing Staff on Primary Bloodstream Infection Rates in a Surgical Intensive care Unit,” *Infect Control and Hosp Epidemiol* (21:12-17 (2000); see also, A. Clements, “Overcrowding and Understaffing in Modern Health-Care Systems: Key Determinants in Meticillin-Resistant Staphylococcus Aureus [MRSA] Transmission,” *Lancet Infect Dis* 8(7):427-34 (July 2008).

⁹ See, Healthcare Cost and Utilization Project, HCUP Facts and Figures 2009: Statistics on Hospital-based Care in the United States (Oct. 2011), Exhibit 1.2, Inpatient Hospital Stays and Average Length of Stay; and L. Unruh and M. Fottler, “Measures of Nurse Staffing: Should We Account for Patient Turnover?” *Health Serv Res* 41(2):599-612 (Apr 2016).

nursing care plan as established by the nursing staff, but do not make medical diagnoses or prescribe medical treatments or drugs¹⁰

RNs also may supervise the work of other RNs, LPNs and CNAs, and when they do they bear responsibility for all of the patients of the staff they supervise.¹¹

RNs must receive a degree or diploma for at least two years of education/training from a program in general professional nursing and pass an examination to qualify for a license from New York's Education Department. After receiving their license, they are required to re-register with the Education Department every three years, and also complete a course in infection control every four years.¹²

- **Licensed Practical Nurses (“LPNs”).** LPNs (sometimes called “licensed vocational nurses” or “LVNs”) perform care tasks to implement medical and nursing plans for patients, but they do so under the supervision of an RN or other senior nursing or medical professional. LPNs can provide treatment, administer most types of prescribed medications, provide bedside nursing care, check vital signs, and document care (observation, recording, reporting). They may perform a variety of clinical procedures, such as urinary catheterization and sterile dressing changes. They do not, however, have authority to assess patients; perform triage; provide clinical services that require nursing or medical assessment such as IV chemotherapy, IV anesthesia or IV antibody therapy; or develop or change nursing care plans in response to patients' needs.¹³

LPNs must have a high school degree or equivalent, graduate from at least a nine-month program in practical nursing and pass an examination to qualify for a license from New York's Education Department. Like RNs, they must re-register with the Department every three years, and also complete a course on infection control every four years.¹⁴

- **Certified Nurse Assistants (“CNAs”),** sometimes more commonly known as “nurse aides,” provide direct personal care and services related to safety, comfort, and personal hygiene under the supervision of a RN or LPN.¹⁵ Their duties vary substantially from hospital to hospital. They may take the patient's vital signs (temperature, blood pressure, etc.), help with feeding or walking the patients, or conduct clerical or supply-stocking tasks. CNAs can report observations of changes in resident conditions but, like LPNs, they do not have authority to assess patients and change nursing care in response to patients' needs.

¹⁰ See Education Law, §6902(1); NYS Education Department, Office of the Professions webpage, “Nursing” (available at <http://www.op.nysed.gov/prof/nurs/>, accessed 7/27/15).

¹¹ NYS Education Department, Office of the Professions webpage, “Consumer Information: What You Should Know About Nurses and Nursing Services” (available at <http://www.op.nysed.gov/prof/nurse/nursebroch.htm>, accessed 7/27/15).

¹² Education Law, § 6502 (1) (duration and registration of a license) and 6505-b (infection control training).

¹³ Education Department, Office of the Professions webpage, “Consumer Information: What You Should Know About Nurses and Nursing Services,” *supra*.

¹⁴ Education Law, § 6502 (1) (duration and registration of a license) and 6505-b (infection control training).

¹⁵ See 10 NYCRR § 415.13(c)(1).

CNAs are not licensed but receive some training and certification. They must complete a state approved nurse aide training program of at least 100 hours' duration (including both classroom and clinical training) and pass a State authorized clinical skills competency examination and written or oral competency examination. A CNA must be recertified every two years, documenting that he or she has worked at least seven hours for compensation as a nurse aide during the prior 24 month period.¹⁶ Unlike RNs and LPNs, CNAs are not required to complete a course on infection control every four years.

Other care may be provided by personal care or mobility aides who do not have the level of education and clinical experience to qualify for licensing or certification.

It should be noted that hospitals generally also have pharmacists, medical equipment technicians, and social workers, as well as hospital clerical and cleaning staff. These staff have important roles to play. One nurse commented:

The night shift has more trouble because the support system isn't there. The pharmacists and managers and technicians often are not around, housekeeping is not around. We're filling in all the gaps.¹⁷

An emergency department nurse complained that, in addition to having only two RNs present at night no matter how many patients were there, "We also have no ancillary staff after 3:00 am."¹⁸ When key support staff are missing, nursing care staff may find themselves having to take time away from direct patient care to perform other basic necessary tasks to maintain the unit's activity.

Hospital nursing staff levels are usually measured in one of two ways.

- In hospitals, the typical measurement is the nurse-to-patient ratio. This ratio varies from unit to unit in a hospital based on the level of care required for the patients (often called "patient acuity"). The amount and skill level of nursing care needed in an operating room or intensive care unit ("ICU"), for example, would be greater than that needed in a general medical/surgical unit where many patients are being prepared for, or are recovering from, surgery or treatment. (The term "patient day" is sometimes used instead of "patient" to account for the fact that a bed may be occupied by more than one patient, in succession, during a shift as patients are discharged and new patients arrive.
- Some research studies of hospital care use a different metric, measuring "nursing hours per patient day." This measurement is more commonly used for nursing homes, given that most nursing home residents do not require nursing care all day long, although they may need other types of assistance with activities of daily living.

¹⁶ 10 NYCRR § 415.26(d)(2), (3), (4) and (6). Clinical training must include at least 30 hours of supervised practical experience in a nursing home. 10 NYCRR §415.26(d)(3).

¹⁷ Interview of nurse with 30 years of experience, March 27, 2015.

¹⁸ Written comment from emergency department nurse, April 2015.

Another factor often considered in evaluating staffing levels in a healthcare facility is adequacy of the “skill mix,” which refers to the proportion of staff that have greater or lesser amounts of training, and higher or lower levels of licensure or certification. The skills mix needed within a single hospital is likely to vary from unit to unit, based on the reasonably expected level of patient acuity. While few studies have been conducted on the relationship between LPN staffing and outcomes, a study that measured total nursing care did note that higher ratios of RNs to LPNs and assistants (“RN skill mix”) were associated with fewer cases of sepsis and failure to rescue (incidents in which a patient dies or develops a permanent disability after developing a complication in the hospital from an underlying illness), and another study found that Medicare patients with acute myocardial infarction (heart attacks) who were treated in units with higher RN versus LPN staffing were less likely to die in-hospital.¹⁹ While nationally, the proportion of nursing care hours provided by LPNs has dropped by more than half from 2004 to 2011 and the proportion of hospitals using LPNs for nursing care dropped from 86% in 2004 to 68% in 2011,²⁰ not all forms of patient care require RN training and each hospital care unit will have its own optimal skills mix.

This discussion is not intended to imply that managing nursing staff levels is the only way to enhance the quality of hospital care; other factors certainly can have significant impacts on outcomes.

- Good management can make a difference in how effectively a nursing staff functions. For example, a study of nursing homes without significant differences in staffing or skills mix found that nursing leadership, team processes, commitment to basic care tasks such as ambulation, nutrition and hydration, and toileting, and management commitment to quality improvement were associated with better outcomes.²¹
- Programs for safe lifting and moving of patients (“safe patient handling”) using staff training and modern equipment to eliminate the use of manual lifting can also make a difference.²²
- Efficient medical record systems and record-keeping methods can be helpful.

These are all important developments in care.

¹⁹ M. Blegan, *et al.* “Nurse Staffing Effects on Patient Outcomes: Safety-Net and Non-Safety-Net Hospitals,” *Med Care* 49(4):406-14 (2011); and S. Person, “Nurse Staffing and Mortality for Medicare Patients with Acute Myocardial Infarction,” *Med Care* 42(1):4-12 (Jan. 2004). See, V. Staggs and N. Dunton, “Associations Between Rates of Unassisted Inpatient Falls and Levels of Registered and non-Registered Nurse Staffing,” *J Qual Health Care* 26(1):87-92 (Feb. 2014) (increasing LPN and CNA staff did not reduce unassisted falls except in rehabilitation units; higher RN staffing was linked somewhat with lower fall rates in medical-surgical units. It did not discuss how skills required to prevent falls may vary among units.

²⁰ V. Staggs and J. He, “Recent Trends in Hospital Nurse Staffing in the United States,” *J Nurs Admin* 43(7/8):388-393, 391 (July/Aug. 2013) (data based on adult ICUs and general care units via the National Database of Nursing Quality Indicators).

²¹ M. Rantz, *et al.*, “Nursing Home Quality, Cost, Staffing, and Staff Mix,” *Gerontologist* 44(1):24-38 (2004); see also P. Shekelle, M.D., Ph.D., “Nurse-Patient Ratios as a Patient Safety Strategy: A Systemic Review,” *Ann Intern Med* 158(5 Pt 2):404-09 (Mar. 5, 2013) (“meta-analysis”), p. 404.

²² See, CDC/NIOSH webpage on ‘Safe Patient Handling,’ <http://www.cdc.gov/niosh/topics/safepatient/>.

Nevertheless, the preponderance of evidence supporting the importance of nursing staff levels, especially regarding RNs, is substantial and persuasive, with data showing that RN staffing affects patient mortality from a variety of health conditions and that nursing staff levels affect many different types of other adverse healthcare outcomes. The information unearthed by the existing body of research on the impacts of nursing staff levels for patient safety is persuasive for several reasons:

- The body of research include both cross-sectional (looking at a particular outcome for a large number of hospitals) and longitudinal (looking at impacts at a single facility over time) studies;
- The positive correlations that are shown between nursing staff levels and healthcare quality involve a variety of important healthcare outcomes; and
- Some of the studies have correlated positive outcomes with various specific differentiated levels of nurse staffing and some have found differentiated impacts based on nursing skill levels.

Taken together, the correlations shown in these studies make a persuasive case that nursing levels have a significant impact on the quality of care, even though other improvement efforts in healthcare safety may also be at play. It is more than reasonable to state that sufficient nurse staffing has an essential role to play in nursing effectiveness – and patient safety.

**PART ONE:
WHO IS AT RISK FROM UNDERSTAFFING OF NURSES?**

Good bedside and person-to-person care is essential for each hospital patient. All patients have important needs that must be met – they would not be in a hospital if they did not. On a daily basis, patients who require attentive, responsive nursing include, but are not limited to, people who need:

- Pain management;
- Assistance with mobility limitations or activities of daily living;
- Assistance with communication challenges such as hearing or speech disabilities;
- Frequent observation of a health condition that requires careful monitoring;
- Specific, timely tasks, especially when addressing complex or prolonged treatment

Other patients who are particularly vulnerable to nursing shortages are those who do not have a loved one or trusted friend available to spend substantial amounts of time on-site, helping to solve problems and get the individual's needs met. Family members and friends, in turn, are adversely affected by the stress of trying to get their loved one's unmet needs addressed under conditions of facility understaffing, and nursing staff can suffer fatigue and even work-related injuries under inadequate staffing conditions.

A. Daily Impacts of Short-Staffing: How the Stress Affects Patients, Their Loved Ones and Healthcare Workers

The real-world impacts of short-staffing of nursing care in hospitals care – which may include RNs, LPNs or certified nurse aides – can be felt in daily stresses and fears for patients.

“Is anybody really looking at my condition?” With an insufficient number of nurses on staff, the ability to closely monitor patients can be hampered. Improved surveillance for complications can lead to earlier identification of complications, earlier intervention, earlier discharges and fewer readmissions (Dresser, 2012).

“My position in bed is hurting me.” Under conditions of short-staffing, a patient who needs medication or blood sampling is likely to be a higher priority than a patient with mobility issues who has slid down on the bed and cannot reposition himself or herself. Yet repositioning problems can cause a patient significant back pain and make it impossible to sleep.

Short-staffing places extraordinary pressure on the family or supportive friends of a patient:

“It’s hard to keep asking, but no matter how busy they are, I still have to get my mother what she needs.” Timely pain medication, answers to questions about

proposed treatment, a shifting of position in the bed – these are all reasonable requests. Yet a patient’s family or supportive friends have to play a delicate balancing game, making their requests for help in as reasonable and thoughtful a way that they can. Even when they see the healthcare staff are busy, they still need to fight for their own loved one’s needs, which can be a stressful experience.

“Is it safe for me to take a break from watching out for my loved one in the hospital?” Family members and trusted friends often shoulder the responsibility to look after the wellbeing of a hospital patient. At times, this responsibility can be a considerable burden. It is especially so when a facility is understaffed and the family caregiver or friend feels obliged to help the patient get needed attention from staff or manage activities such as getting to the bathroom. Family members should support their hospitalized loved ones as much as they can, certainly, but they should not be put in the position of feeling actually scared to leave their loved one with the hospital staff.

In addition, a family member who is too stressed by all the effort of helping his or her loved one in an understaffed hospital may have little reserve energy to deal with the tasks to be performed when the loved one is discharged to home.

The effects of short-staffing is also felt directly by the nurses themselves. Studies have found that nurse burnout and job dissatisfaction, which can lead to staff turnover, increase significantly as nurses’ workloads increase.²³

“I can’t get it all done. If only there were more hands on deck!” A 2010 survey of nurses found that 41% of nurses in New Jersey and 37% of nurses in Pennsylvania reported that their workloads caused them to *miss changes in patient conditions*.²⁴

One emergency room nurse in New York notes that changes in technology can increase rather than decrease a nurse’s workload, explaining, “Doctors can look at patients file while at their kids’ baseball games, and fire off several prescriptions and orders without even seeing the patient, but we have to be in the room, carrying out those instructions. So it helps us reach them and it can improve our communication, but it doesn’t help us get the work done any faster.”²⁵

“It’s not a question of whether – it’s only a question of when. If they don’t give me some help, I’m going to get injured.” As explained in part 5 of this report, staffing levels can also affect occupational safety, creating greater risks of musculoskeletal injuries due to failure to take the time to use proper lifting or patient repositioning equipment, or needlestick accidents due to rushing or distraction.²⁶

²³ L. Aiken, *et al.* (2002), *supra*.

²⁴ L. Aiken, *et al.*, “Implications of the California Nurse Staffing Mandate for Other States, *Health Serv Res* 45(4):904-921 (Aug. 2010), *supra*, Table 3.

²⁵ Interview with emergency room nurse having 25 years of experience, Mar. 27, 2015.

²⁶ See Table 2 in part 5 of this report.

B. Patients in Short-Staffed Hospitals Face Specific Health Risks – Including Increased Risk of Mortality

The anxiety that hospital patients, their supportive friends and family, and healthcare workers face under short-staffed conditions is well justified by documentary evidence. Substantial research has been conducted on the impact of RN staffing, and some studies also address the impact of “total nursing care,” which includes not only RNs but also LPNs and CNAs.

1. The evidence is strong that having sufficient RN staffing levels saves lives.

The evidence linking RN nurse-to-patient ratios with mortality outcomes in hospitals is strong. A comprehensive review²⁷ of 87 journal articles and 15 more recent studies examining this evidentiary relationship identified two particularly strong and well-documented analyses of the issue.

- The first, an analysis of 28 studies, found a consistent relationship between higher RN staffing and lower hospital-related mortality. Adding one RN per patient day was associated with a 9% reduction in odds of death for ICU patients and a 6% reduction for medical patients. It was also associated with a 16% decrease in failure to rescue in surgical patients, while length of stay was shorter by 24% in ICUs and by 31% in surgical patients.²⁸

The study concluded that if these associations are causal, then adding one RN per patient day would save 5 lives per 1,000 ICU patients, 5 lives per 1,000 medical patients and 6 lives per 1,000 surgical patients.²⁹

- The second was a longitudinal study examining data over time from a single hospital, matching nurse staffing, shift-by-shift, with the actual patients cared for (allowing for more sophisticated adjustments for patient acuity and risk). The study, which included nearly 200,000 hospitalizations across 43 hospital units, found that the risk of death rose by 2% for each shift in which RN hours were eight hours or more below target staffing levels, with higher risk if the low staffing occurred in the first five days of hospitalization.³⁰

²⁷ P. Shekelle, *supra*.

²⁸ R. Kane, *et al.*, “The Association of Registered Nurse Staffing Levels and Patient Outcomes: Systemic Review and Meta-Analysis,” *Med Care* 45:1195-1204, 1195 and 1197-98 (2007).

²⁹ The measure for one RN in this study is, more specifically, one RN full-time equivalent. R. Kane, *et al.*, *supra*, pp. 1195 and 1197. This review encompassed studies published up to September 2012. *Id.*

³⁰ J. Needleman, *et al.*, “Nurse Staffing and Inpatient Hospital Mortality,” *N Engl J Med* 364:1037-45 (2011). The study was funded by the AHRQ. The risk was higher for patients who were not in an ICU.

Other studies have found strong correlations as well. A longitudinal study found that an increase of one RN per 1,000 inpatient days was associated with a 4.3% drop in mortality.³¹

Another study found that in Pennsylvania hospitals with low nurse-to-patient ratios, each additional patient per nurse was associated with a 7% increase in the odds of failure to rescue (at the hospital) and also 7% increase in likelihood of dying after common surgeries within 30 days of admission. Based on the results, the study estimated that an increase in nurse workload from four to six patients would be accompanied by a 14% increase in mortality, and an increase from four to eight patients would be accompanied by a 31% increase in mortality.³²

In other words, having sufficient levels of RN staffing in hospitals saves lives.

Although less information is available on the impacts of LPN and CNA nursing care in hospitals, a 2011 study found that total hours of nursing care (including care from RNs, Licensed Practical Nurses and assistants) was associated with lower rates of congestive heart failure mortality and failure to rescue.³³ Not surprisingly, the National Quality Forum has identified “death among surgical inpatients with treatable serious complications” (failure to rescue) as one of its eight specific patient-centered outcome measures for “nursing-sensitive care” for the purpose of measuring the quality of healthcare performance in hospitals.³⁴

In addition, as explained below, nursing staff levels have been documented to have a significant impact on specific medical conditions in hospitals.

2. Other Dangers: Special health risk areas for hospital patients from short-staffing in both RN care and total nursing care

The real world impact of short-staffing on the health and welfare of hospital patients should be central to any discussion of staffing levels in healthcare. Studies have linked low nursing staff levels with specific health risks and adverse medical outcomes in hospitals. While *all* patients are at risk when a hospital is short-staffed, these studies highlight special health risk areas for patients that can have grievous consequences, and some patients are more vulnerable to certain risks than the general population. As Table 1 below explains, these health conditions include – but are not limited to:

(a) Hospital-acquired or nursing-home-acquired infections, which may include:

- Bloodstream infections;
- Surgical site infections;
- Urinary tract infections;
- Respiratory infections; and
- Sepsis;

³¹ D. Harless and B. Mark, “Nurse Staffing and Quality of care with Direct Measurement of Inpatient Staffing,” *Med Care* 48:659-63 (2010). The amount of RN staff was measured in terms of “full time equivalents.”

³² L. Aiken, *et al.* (2002), *supra*. The study adjusted for patient risk in measuring the mortality and failure to rescue rates.

³³ M. Blegan, *et al.*, *supra*.

³⁴ National Quality Forum, *National Voluntary Consensus Standards for Nursing-Sensitive Care: An Initial Performance Measure Set* (2004).

- (b) Hospital-acquired pneumonia (special risk to older adults and infants/children under two years old, and for people with asthma, chronic obstructive pulmonary disease (COPD), heart disease, weakened immune system, or otherwise using a ventilator)
- (c) Cardiac arrest (special risk for people with scarring from a heart attack, a thickened heart muscle caused by high blood pressure or other issues, or electrical or blood vessel abnormalities, and people taking certain medications)
Respiratory failure (a risk from sepsis, severe pneumonia and other factors)
- (d) Falls (special risk for people with gait instability, lower limb weakness, urinary frequency or incontinence, and people who are prescribed certain medications; and
- (e) Other adverse events in hospitals, such as shock and upper gastrointestinal bleeds.³⁵

As explained further in Table 1 below, the evidence is extensive regarding the great severity of harm that can occur from short-staffing of nursing care, especially RN care. This harm can be devastating to both patients and the family members or supportive friends who care about them and try to help.

³⁵ Studies examining the impact of hospital nurse staffing on pressure sores (“bedsores”) have had uneven results. (In nursing homes the documented link between nursing staff time and pressure sores is strong. *See, e.g.*, Abt Associates, Inc., “Appropriateness of Minimum Nurse Staffing Ratios in Nursing Homes: Phase II Final Report,” Report No. 500-95-0062/TO#3 CMS, Dec. 2001.) In one study, a rise in hospital acquired pressure ulcers was associated with mean nurse staffing ratio and with the percentage of days in which staffing was under 100% for the prior week. N. Donaldson *et al.*, “Final report: Impact of Unit Level Nurse Workload on Patient Safety” (Grant 5-01-HS11954, AHRQ) (Apr. 2005). But the author of a review of several studies noted an anomalous association of more pressure ulcers with more hours of care and suggested that it may have been due to greater detection of the condition. P. Shekelle (2013), p. 407.

**TABLE 1:
ADVERSE HEALTH OUTCOMES LINKED TO UNDERSTAFFING IN HOSPITALS**

HEALTH CONDITION & WHO IS AT SPECIAL RISK	RESEARCH STUDY FINDINGS
<p>HOSPITAL-ACQUIRED INFECTIONS Roughly one of every 25 patients in U.S. acute care hospitals has at least one healthcare-associated infection, with pneumonia and surgical-site infections the most common infection types and <i>C. difficile</i> the most common pathogen.³⁶</p> <p>The National Quality Forum (“NQF”) has identified “central line catheter-associated blood stream infection rate for ICU and high-risk nursery patients” and “urinary catheter-associated urinary tract infection for intensive care unit patients” as two of its eight outcome measures for evaluating “nursing-sensitive care.”³⁷</p>	<p>- An increase by one RN per patient was linked to lower risk of <u>hospital-acquired bloodstream infection</u> (36%) in surgical patients, and an increase of 1/10 of a nurse was linked to 40% higher odds of infection for very low-birth-weight infants in neonatal ICUs.³⁸</p> <p>- A 10% rise in “burned-out” RNs increased the rate of <u>surgical site infections</u> by over two per 1,000 patients, and <u>urinary tract infections</u> by over one per 1,000 patients.³⁹</p> <p>- Data from 799 hospitals in 11 states revealed that hospitals with worse RN nurse-to-patient ratios had higher rates of <u>urinary tract infections</u>.⁴⁰</p> <p>- A rise in <i>total hours of nursing care</i> (RNs, LPNs and aides) was linked to lower rates of infections; a rise in RN skill mix was linked to fewer cases of <u>sepsis</u>.⁴¹</p>
<p>HOSPITAL ACQUIRED PNEUMONIA The two age groups most at risk are infants/children under age two and people older than 65. Other risk factors: asthma, chronic obstructive pulmonary disease (“COPD”), heart disease; weak immune system, smoking, and being on a hospital ventilator.⁴² NQF lists ventilator-associated pneumonia for ICU and high-risk nursery patients among its 8 outcome measures for “nursing-sensitive care.”⁴³</p>	<p>- An increase of 1 RN per patient day was associated with lower odds for hospital-acquired pneumonia (30% in ICUs, 19% for all patients).⁴⁴</p> <p>- Data from 799 hospitals in 11 states revealed that hospitals with worse RN nurse-to-patient ratios had higher rates of pneumonia.⁴⁵</p>
<p>CARDIAC ARREST Cardiac Arrest is the abrupt loss of heart function, usually due to malfunction of the heart’s electrical system. Risk factors: scarring from a heart attack, a thickened heart muscle (often due to high blood pressure), certain heart medications, illegal drug use, or electrical or blood vessel abnormalities.⁴⁶</p>	<p>- An increase by 1 RN per ICU patient was associated with a 28% lower odds ratio for cardiac arrest.⁴⁷</p> <p>- Data from 799 hospitals in 11 states revealed that hospitals with worse RN nurse-to-patient ratios had higher rates of cardiac arrest.⁴⁸</p>

³⁶ S. Magill, “Multistate Point-Prevalence Survey of Health Care-Associated Infections,” *N Engl J Med* 370:1198-1208 (Mar. 2014).

³⁷ National Quality Forum, *National Voluntary Consensus Standards for Nursing-Sensitive Care* (2004), *supra*.

³⁸ R. Kane, *et al.*, *supra*, pp. 1195 and 1197-98; and J. Rogowski, *et al.*, “Nurse Staffing and NICU Infection Rates,” *JAMA Pediatr* 167(5):444-450 (May 2-013).

³⁹ J. Cimiotti, *et al.*, “Nurse Staffing, Burnout, and Health Care-Associated Infection,” *American J Infection Control* 40(6):486-90 (Aug. 2012). While a meta-analysis published in 2007 did not find consistent relationships between increased nurse staffing and lower rates of urinary tract infections (Kane, *et al.*, *supra*), this 2012 study finding a significant association with infections of surgical sites and the urinary tract was published subsequent to that analysis and also was not included in the updated comprehensive review.

⁴⁰ J. Needleman, *et al.* (2002), *supra*.

⁴¹ M. Blegan, *et al.* (2011), *supra*.

⁴² A weakened immune system may be related to factors such as chemotherapy, AIDS/HIV, or prolonged steroid use. See Mayo Clinic Staff, “Pneumonia: Risk Factors” (<http://www.mayoclinic.org/diseases-conditions/pneumonia/basics/risk-factors/con-20020032>)

⁴³ National Quality Forum, *National Voluntary Consensus Standards for Nursing-Sensitive Care* (2004) *supra*.

⁴⁴ R. Kane, *et al.*, *supra*, pp. 1195 and 1197-98.

⁴⁵ J. Needleman, *et al.* (2002), *supra*.

⁴⁶ American Heart Association, webpage, “Understand Your Risk for Cardiac Arrest” (http://www.heart.org/HEARTORG/Conditions/More/CardiacArrest/Understand-Your-Risk-for-Cardiac-Arrest_UCM_307909_Article.jsp).

<p>RESPIRATORY FAILURE Acute respiratory distress syndrome (“ARDS”) occurs when fluid builds up in the lungs’ tiny air sacs, impairing oxygen supply to the bloodstream. It can be caused by sepsis (a serious, widespread blood infection); severe pneumonia; or inhaling (aspirating) vomit.⁴⁹</p>	<p>- An increase by 1 RN per patient day was associated with a decreased odds ratio for respiratory failure (60% in ICUs);⁵⁰</p>
<p>FALLS Falls are surprisingly common in hospitals – up to 12% of patients fall at least once.⁵¹ At special risk: People with gait instability; leg weakness; urinary frequency or incontinence; agitation or confusion; and prescription of certain drugs.⁵²</p> <p>A patient may be at chronic risk or may undergo “transient risk” due to surgery or illness. NQF lists “falls prevalence” and “falls with injury” as 2 of its 8 patient-centered outcome measures for “nursing-sensitive care.”⁵³</p>	<p>- While a 2007 meta-analysis did not find consistent links between increased RN nurse staffing and fewer falls in hospitals,⁵⁴ subsequent studies generally have found a significant relationship.</p> <p>- A 2012 study found that lower nursing hours per patient day (<i>total nursing care</i>) accounted for 13% of the variance in falls. Nursing hours per patient day were significantly associated with “missed nursing care” (specific tasks), and even if specific “missed nursing care” such as patient ambulation were supplied, the impact of nursing hours still accounted for 8.3% of the variance in falls.⁵⁵</p>
<p>OTHER ADVERSE EVENTS linked to staffing include unplanned extubation, shock, upper gastrointestinal bleeds.</p> <p>Also, an increase in <i>total nursing care</i> (RNs, LPNs and aides) was linked to fewer incidents of prolonged length of stay.⁵⁶</p>	<p>- An increase by 1 RN per patient day was linked to 15% lower odds for unplanned extubation in ICUs).⁵⁷</p> <p>- Data from 799 hospitals in 11 states revealed that hospitals with worse RN nurse-to-patient ratios had higher rates of shock and upper gastrointestinal bleeds.⁵⁸</p> <p>- An increase of 1% in RN nurse staffing reduced the number of adverse events by 3.4%, and a 5% increase reduced adverse events by 15.8%.⁵⁹</p>

⁴⁷ R. Kane, *et al.*, *supra*, pp. 1195 and 1197-98.

⁴⁸ J. Needleman, *et al.* (2002), *supra*.

⁴⁹ Mayo Clinic Staff, “ARDS: Causes” (<http://www.mayoclinic.org/diseases-conditions/ards/basics/causes/con-20030070>); Mayo Clinic Staff, “ARDS: Risk Factors” (<http://www.mayoclinic.org/diseases-conditions/ards/basics/risk-factors/con-20030070>).

⁵⁰ R. Kane, *et al.*, *supra*, pp. 1195 and 1197-98.

⁵¹ J. Coussement, *et al.*, “Interventions for Preventing Falls in Acute- and Chronic-Care Hospitals: A Systematic Review and Meta-Analysis,” *J Am Geriatr Soc* 56(1):29-36 (2008).

⁵² D. Oliver, *et al.*, “Risk Factors and risk Assessment Tools for Falls in Hospital I-Patients: A Systematic Review,” *Age and Ageing* 33(2):122-130, 124 (2004).

⁵³ National Quality Forum, *National Voluntary Consensus Standards for Nursing-Sensitive Care* (2004), *supra*.

⁵⁴ R. Kane, *et al.*, *supra*. A study of 2004 data for over 600 hospitals found that adding one RN hour/patient day was associated with a 3% lower fall rate in ICUs and 2% lower rate hospital-wide, but questioned if higher patient acuity may have affected the change. E. Lake, *et al.*, “Patient Falls: Association with Hospital Magnet Status and Nursing Unit Staffing,” *Res Nurs Health* 33(5):413-25 (2010).

⁵⁵ B. Kalisch, *et al.*, “Missed Nursing Care, Staffing, and Patient Falls,” *J Nurs Care Quality* 27(1):6-12 (Jan/Mar 2012). *See also*, N. Dunton, *et al.*, “Nurse Staffing and Patient Falls on Acute Care Hospital Units,” *Nurs Outlook* 52(1):53-59 (Feb. 2004).

⁵⁶ V. Staggs and J. He, *supra*, p. 391 (data based on adult ICUs and general care units).

⁵⁷ R. Kane, *et al.*, *supra*, pp. 1195 and 1197-98.

⁵⁸ J. Needleman, *et al.* (2002), *supra*. (This study was based on data from 799 hospitals in 11 states.)

⁵⁹ K. Frith, *et al.*, “Effects of Nurse Staffing on Hospital-Acquired Conditions and Length of Stay in Community Hospitals,” *Quality management in Health Care* 19:147-55 (2010). This study examined data on nearly 35,000 patients from 11 medical-surgical units in four hospitals over a two-year period.

PART TWO: CUTTING CORNERS ON SAFETY: THE RISKS AND THE UNKNOWN CONDITIONS

The combined effects of managed care payment systems, hospital mergers and consolidations, increased desire for expensive new technologies, compensation for high level management and other trends have been changing the face of healthcare, and a growing concern is the extent to which cost-cutting measures have taken their toll, at the frontline, on patient care. A facility may cut corners on safety by lowering the overall number of healthcare workers or by lowering the “skill set” of its staff. The Institute of Medicine’s 2004 report, *Keeping Patients Safe: Transforming the Work Environment of Nurses*, which came about as a response to such “fast-paced changes” occurring in healthcare delivery, raised concerns about the impact on nurses of excessive workloads due to understaffing.⁶⁰

Ironically, these pressures have come at a time when patient acuity has increased, not decreased. In general, the pressure to shorten hospital stays has become heavier and more persistent. A report by the Robert Wood Johnson Foundation cited interviews with physicians and nurses explaining that there was significant pressure on them to discharge patients as quickly as possible because of the financial impact on the hospital of extended stays.⁶¹ This situation is at the root of the complaint that hospitals are sending patients home “sicker and quicker.”

The fact that patients have to worry about the availability of nursing staff presents both a safety issue and an equality issue. Some patients hire a private nurse or aide to be at bedside with them in a hospital. Yet round-the-clock attendance is not something that every patient can arrange, either by relying on family or friends, or paying for a private nurse or aide. As one writer noted, “After all, it’s not a cheap option, and it’s not covered by insurance.”⁶² Indeed, the very notion of this somehow being a necessity for safety would indicate that patients without substantial reserves of cash are at a significant disadvantage in a hospital.

But the bottom line is, hospital patients in New York – despite the existence of a statute intended to improve transparency – know very little, if anything, about how an individual hospital is managing its nursing staff levels or how it compares with other hospitals, and they have reason to be concerned about it.

⁶⁰ Institute of Medicine, *Keeping Patients Safe*, *supra*, p. 23.

⁶¹ Robert Wood Johnson Foundation, *The Revolving Door: A Report on U.S. Hospital Readmissions* (Feb. 2013), p. 40.

⁶² Alina Tugend, “Going to the Hospital? Don’t Forget to Pack a Nurse,” *New York Times* (Sept. 17, 2005) (<http://www.nytimes.com/2005/09/17/business/17shortcuts.ready.html?pagewanted=2&r=0&ei=5088&en=4e431bb9fea1abc4&ex=1284609600&partner=rssnyt&emc=rss>).

A. Hospitals in New York Generally Keep Patients and the Public in the Dark About Staffing Levels.

A critical and intensive care nurse explained that while nurses in her unit probably should care for only one or two patients, depending on patient needs, night shifts are being short-changed. She noted:

When you are short-staffed, all you can do is go through the motion of the tasks. It takes away your ability to be that caregiver, to be there for the patient. And you may find yourself checking the computer data but not also looking at the patient. You need to get them through one of the worst situations they'll ever be in, but if you're always running away you're not really there.⁶³

She reported that it had been three patients every night recently, and every once in a while it has risen to four.⁶⁴ Yet hospital patients generally know nothing about a hospital's nurse-to-patient ratios and many would not even realize that they should find out about it. And most hospitals are doing nothing to inform patients about their staffing levels.

The commitment among various healthcare facilities to provide adequate staffing can vary to a significant degree, yet reliable comparative information in New York on hospital staffing is not readily available. While hospitals undergo an accreditation process, the standards for accreditation do not include benchmarks for nurse-to-patient workloads. The Joint Commission,⁶⁵ which accredits most hospitals in New York, provides only vague, generic language on nursing staff levels. It states, as a standard, "the hospital has the necessary staff to support the care, treatment, and services it provides," and that the nurse executive "directs the implementation of ... a nurse staffing plan(s)."⁶⁶ It adds, as an item for leadership evaluation, "Leaders provide for a sufficient number and mix of individuals to support safe, quality care, treatment, and services."⁶⁷ It does not include any range of acceptable nursing workloads.

Information specific to New York is not easy to unearth. The NYS Department of Health's website does not include staffing ratio information. In reviewing the websites of 95 of the largest hospitals in New York (with over 200 staffed acute care beds), only the Upstate University Hospital (SUNY) in Syracuse was found to post nursing ratio data by unit.⁶⁸ Yet even this information was presented as quartile (three month) averages, so it was impossible to tell how widely the ratio might vary on a daily basis, and it is not audited for accuracy by any state agency. Notably, a complaint was submitted to the Department of Labor in 2014 about the hospital not providing meal breaks for staff.

⁶³ Interview of critical and intensive care nurse with 29 years of experience, Mar. 27, 2015.

⁶⁴ *Id.*

⁶⁵ The Joint Commission is an independent nonprofit accrediting body founded in 1951. To earn and maintain accreditation from The Joint Commission, its survey team must review the hospital's operations at least once every three years for consistency with The Joint Commission's standards for accreditation. The Joint Commission, *Joint Commission FAQ Page* (<http://www.jointcommission.org/about/jointcommissionfaqs.aspx#600>, accessed 7/27/2015).

⁶⁶ The Joint Commission, *2014 Hospital Accreditation Standards*, HR.01.01.01 and NR.02.03.01.

⁶⁷ *Id.*, LD.03.06.01

⁶⁸ Upstate University Hospital, "Nursing Quality Measures" webpage (<http://qoc.upstate.edu/NurseStaffingDisplay.cfm>, accessed July 27, 2015).

B. The Law and Regulations Intended to Bring Sunlight to Hospital Staffing Ratios Do Not Provide Timely or Sufficiently Useful Information for Patients

The New York State Legislature certainly intended, with adoption of a Nursing Care Quality Protection Act in 2009, that useful information on staffing would be available to the public, but the statute does not appear to be achieving that purpose, especially given how it has been interpreted by the Department of Health in regulations. New York Public Health Law §2805-T grants the public the right to request information on:

- The number of registered nurses providing direct care;
- The ratio of patients per registered nurse providing direct care;
- The number of licensed practical nurses providing direct care; and
- The number of unlicensed personnel utilized to provide direct patient care.

The data for RNs and LPNs must be expressed “in actual numbers, in terms of total hours of nursing care per patient, including adjustment for case mix and acuity, and as a percentage of patient care staff, and shall be broken down in terms of the total patient care staff, each unit and each shift.”⁶⁹

The Department of Health, in proposing regulations for the law, noted that hospital already gather and maintain such data, so that ongoing costs of implementation would be small but variable.⁷⁰ Although this legislation was signed into law on September 17, 2009 and made effective March 15, 2010, the Department of Health took *five years* to establish regulations to carry it out. The regulations took effect on January 7, 2015.⁷¹ Unfortunately, the Department’s regulations are obscure in ways that render any reporting difficult to interpret and use for drawing comparisons among hospitals:

- The statute requires reporting of the number of registered nurses providing direct care and the ratio of patients per registered nurse, full-time equivalent, providing direct care, *but the regulations define patient care staff as those providing direct patient care “greater than 50% of their shift.”* The non-care hours should not be included in the calculation of full-time equivalent staff for number or ratio purposes, but this is not stated directly in the regulations. And,
- The statute requires reporting of staff numbers and ratios, *but the Department allows facilities to report these in averages of three to twelve months.* Actual staffing levels could vary enormously within such long measuring periods.

⁶⁹ Public Health Law, §2805-t(1)(a)-(c) Nurses are counted in terms of “full time equivalents” rather than individuals, who may work varying hours. The number of non-licensed nursing care staff need only be expressed in actual numbers and as a percentage of patient care staff, not in hours of care per patient. The law also requires disclosure of adverse patient care incidents such as medication errors and hospital-acquired infections. PHL § 2805-t(1)(d).

⁷⁰ NYS Department of Health, Regulatory Impact Statement, Proposed Rule Making: Addition of Section 400.25 to Title 10 NYCRR, Disclosure of Quality and Surveillance Related Information (Jan. 8, 2004) (hereafter, NYS Department of Health Regulatory Impact Statement) (<http://w3.health.state.ny.us/dbspace/propregs.nsf/108a43b5127d3477852569bc006381fb/08eb5937bf1dcbf985257c58005c1216?OpenDocument>), p. 1.

⁷¹ 10 NYCRR § 400.2 (effective Jan. 7, 2015).

The regulations therefore do not provide any assurance to a patient regarding the minimum staffing level that the hospital will tolerate.

To obtain a sample of the types of responses that might be generated under these regulations, four information queries were sent, directed to two individual hospitals (one on Long Island and one in the Capital region), a hospital system in upstate New York and the New York City Health & Hospitals Corporation.

- Hospital 1 provided nurse-to-patient ratios by unit *but not by shift* and used *nebulous floor or unit numbers* to describe most of the units other than ICUs, but for its staffing ratios it distinguished not only between RNs and LPNs but also between hospital employees and “agency” RNs or LPNs. Also, it provided a useful monthly breakdown.
- Hospital 2 provided nurse-to-patient ratios by unit and shift, and used clearly descriptive words (rather than acronyms or simply floor numbers) to identify the types of hospital units listed, *but did not distinguish between RNs and LPNs in its ratios*.
- The upstate hospital system only provided nursing hours per patient day, *leaving the recipient to calculate the ratio* (which can of course be done but could introduce error in interpretation); it provided the data by unit *but not by shift* and used *nebulous floor or unit numbers* to describe most of the units other than ICUs, and it *failed to provide ratios for LPNs*, providing ratios only for RNs and total nursing care (including non-licensed care).
- The NYC Health & Hospitals Corporation did not provide any data at all within the required 30 days, only sending a letter at the end of the 30 day period stating that it would likely take another 60 days to respond.⁷²

Inherent limitations of the statute itself also are problematic:

- Because the statute does not require hospitals to report the staffing data to the Department of Health, there is no centralized source for the information. Every request must be made directly to the hospital – which is not the most efficient or effective approach, as can plainly be seen from the above examples.
- Because the statute does not require hospitals to post their staffing data online, and hospitals have 30 days to respond to an information request, prospective patients or family caregivers cannot get this information quickly.
- Also, the data is self-reported and not audited.

⁷² Letter from Patricia Lockhart, Records Access Officer, NYC Health and Hospitals Corporation, to Suzanne Mattei, New Yorkers for Patient & Family Empowerment, April 17, 2015.

Finally, staffing ratios at a single hospital vary by month and by shift, and can also vary from hospital to hospital within the same system. Based on the limited information supplied by the hospitals queried for this report:

- Hospital 1 reported that its general medical/surgical unit had a nurse-to-patient ratio of 1 : 3.3 during the day but 1 : 4.1 at night. How this broke down on a monthly basis was not included (and the law and regulations do not require a monthly breakdown).
- Hospital 2, which voluntarily supplied a monthly breakdown, exhibited an annual average nurse-to-patient ratio of 1 : 5.6 (including RNs and LPNs), but in February it had a 1 : 6 ratio and in July it had a 1 : 6.3 ratio.
- Within the upstate hospital system, one hospital's Neonatal Intensive Care Unit (NICU) had an annual average RN-to-patient ratio of 1 : 1.7, while another had a ratio of 1 : 2.3. How these ratios varied over the year or by shift was not provided.

Thus, while the public can now submit a written information request to any individual facilities, the information gathering process is too slow and burdensome to be practical for most patients and their family caregivers,⁷³ and for the purpose of health consumer policy analysis, the value of the information received is limited for comparison purposes as well as subject to easy misinterpretation.

Hospitals themselves have access to their own information, and reportedly over half of the hospitals in New York participate in a private National Database for Nursing Quality Indicators,⁷⁴ run by the American Nurses Association, which asks its members to report monthly averages of RN, LPN and nurse aide hours per patient day for research purposes. Such averages, again, do not reveal the range of disparities in nurse-to-patient ratios that may actually occur. But regardless of this, the public does not have direct access to that information.

The bottom line is that the real ranges of hospital nurse staffing levels allowed by hospitals are not publicly disclosed.

⁷³ By way of comparison, New Jersey requires hospitals to post daily in the patient care area of each unit of the hospital information detailing for each unit, shift by shift, the ratio of patients to RNs, the ratio of patients to LPNs, the ratio of patients to CNAs, and the number of other care professionals. NJ Rev. Stat., §26:2H-5g. Vermont requires patients to do the math – mandating the posting of numbers of RNs, LPNs and CNAs and the maximum patient census. VT Stat., Title 18, § 1854. Neither state requires the hospital to disclose how this daily staffing compares to the hospital's staffing plan. Conversely, Rhode Island requires hospitals to provide their annual staffing plan to the state's health department but does not requiring posting of information at the hospital. RI Gen. Laws, § 23-17.17-8.

⁷⁴ NYS Department of Health Regulatory Impact Statement, p. 1.

C. Reasons for Concern About Disparities in Hospital Nursing Staff Levels in New York

Because most nurses' staffing complaints are made internally within the hospital, a comprehensive statewide database does not exist. Nurses report – in personal interviews, in-house complaints to hospitals, and on-line blogs where they advise each other about where to look for a job – that some hospitals in New York have medical-surgical units where an individual nurse may be responsible for eight or more patients.⁷⁵ Information from some complaints obtained for this report, while not at all representing a scientific sample, raise concerns.

- Four of six complaints obtained regarding medical-surgical units in one hospital, arising on various dates from January through February 2015, alleged RN workloads of 7.5 patients, with the other two complaints referring to patient workloads of 5.3 and 7 patients per nurse.
- Out of six complaints obtained regarding medical-surgical units at another hospital arising on various dates from January and February 2015, one alleged an RN patient burden of 11.6, two alleged a burden of 8.5, and the remaining three were 6.4, 7 and 7.2 patients per nurse.

And such complaints only provide a limited indication of the problem because not all nurses file complaints when faced with low staffing; some feel it is a useless exercise. One commented:

Sometimes when you're short-staffed you don't have the time or energy to fill out the grievance form, to fight. And when you do fill out a staffing grievance, that's it. They just pile up.⁷⁶

Also, nurses fear that their complaints will not be taken seriously when a risk exists and the quality and value of nursing care is undermined, but there is technically no "adverse incident" to report, as the following two examples illustrate:

One hospital normally had three RNs for the nursery to look after both "well babies" and also newborns or babies with health issues that needed more attention. (Their only assistance is a single aide who floats between the nursery and the "mother-baby" unit.) A RN recalls a night in early 2015 when the nursery was staffed with only two RNs. They were monitoring 15 "well" babies (who sporadically were transported back and forth for nursing time with the mother) and four babies who needed extra attention. At 6:00 a.m., a mother's heart stopped during labor. The more experienced RN had to leave the nursery to attend to that at-risk infant while the labor-and-delivery nurses attended to the mother. This left one nurse (who had only recently undergone orientation) in charge of 19 babies. The hospital had to send another RN in as back-up. She noted that babies need a lot of individual attention, and they do not get the attention they should receive in that hospital nursery. She reports that when she raises concerns,

⁷⁵ See, e.g., "Med-Surg Patient:Nurse Ratios in NYC," *allnurses.com* (2014 postings) (<http://allnurses.com/new-york-nursing/med-surg-patient-940993.html>, accessed 7/27/15); "NYC: Common Nurse-to-Patient Ratios," *allnurses.com* (2008 postings) (<http://allnurses.com/new-york-nursing/nyc-common-nurse-294072.html>, accessed 7/27/15).

⁷⁶ Interview of critical and intensive care nurse with 29 years of experience, Mar. 27, 2015.

she's told "Nothing bad happened," but she wonders if parents understand how little attention their babies can get in the nursery. She asks, "How would parents feel if they knew? Does it matter if an infant is crying and no one comes to comfort it?"

Another nurse describes being held responsible for the care of three patients during a particularly bad night in an intensive care unit. The expected ratio in that intensive care unit was one nurse for two patients, yet she and her co-workers had often found themselves placed in the difficult position of having to manage an additional patient in need of intensive care. That evening, an 88-year-old woman was dying (with family members present), while a man in his 30s in a diabetic coma required constant monitoring of his blood sugar and insulin drip to prevent permanent brain damage, and a woman with a serious infection needed attendance to the IV drips keeping her blood pressure compatible with life. So this night, she had to divert her attention away from the dying woman to care for the other two patients, which was a wrenching decision.

Each of these nurses explain that they had previously "gone up and down" the management chain of command trying to get a reasonable staffing level for their unit, but to no avail.

Thus, despite the lack of systematic publicly disclosed data, there are persistent concerns about disparities in nurse staffing in New York's hospitals.

By way of comparison, information from other states indicates that wide disparities in nursing staff levels do occur in some hospitals, including in states with significant urban population centers. The most detailed information at the state level was generated by the State of California prior to establishing nurse-to-patient ratio mandates for hospitals in the state.⁷⁷ In 1999, California passed a law to require its health department to develop and promulgate specific minimum nurse-to-patient staffing requirements in acute care hospitals statewide.⁷⁸ The state's health department developed its staffing requirements through a multi-year rule-making process.

In developing its regulations for nurse-to-patient ratios in hospitals, the state's health department first conducted its own investigation to determine how the 495 acute care hospitals in the state were staffing their units with licensed nurses. It collected data for 90 hospitals, representing several hospital groupings (based on size and other factors). Rather than averaging data over a year or a period of months, the department sought unit-by-unit nurse staffing data for a period of seven days prior to a visit that it conducted at the hospital to verify staffing levels, and also requested staffing data for 10 specific dates, including various days of the week, in the first three months of 2001.⁷⁹ Upon ranking the hospitals based on nurse staffing, the results showed a wide disparity in staffing levels between the fifth percentile and 95th percentile groups of hospitals for several units. Examples include:

⁷⁷ Nine states have enacted legislation with more general requirements for hospitals to establish staffing plans, one of which requires that the hospitals submit such plans to the state health agency. Connecticut (CT Rev. Stat. §19a-89e), Illinois (201 ILCS § 85/10.10), Minnesota (MN Stat. § 144.7055), Nevada (NV Rev. Stat. § 449.242), Ohio (OH Rev. Code § 3727.51-.16), Oregon (OR Rev. Stat. §441.162 – amended in 2015 to require state investigation of complaints), Rhode Island (RI Gen. Laws § 23-17.17-8, which requires that hospitals' annual staffing plans be submitted to the Rhode Island Department of Health), Texas (TX health and Safety Code § 257.004), and Washington (Rev. Code WA § 70.41.420).

⁷⁸ CA Health and Safety Code § 1276.4. See California Code, 22 CCR § 70217.

⁷⁹ California Department of Health Services Final Statement of Reasons, p. 16.

Unit Type	Licensed Nurse to Patient Ratios Pre-Regulation ⁸⁰	
	5 th Percentile	95 th Percentile
Labor and Delivery	1 : 0.6	1 : 2
Postpartum	1 : 0.7	1 : 8.7
Telemetry	1 : 2.6	1 : 8
Medical/Surgical	1 : 3	1 : 8
Pediatric	1 : 1	1 : 6
Sub-acute/transitional	1 : 3.7	1 : 15
Psychiatric (acute care)	1 : 2	1 : 15

A study that surveyed thousands of nurses in New Jersey and Pennsylvania, compared with California, also revealed disparities in staffing levels. Nurses in these three states were asked in 2006 how many patients they had cared for in their last shift. The information on medical-surgical units (often used as an indicator for hospital staffing) is significant:

- While 88% of medical-surgical nurses in California (having minimum ratios) reported caring for five patients or fewer, only 19% of such nurses in New Jersey and 33% in Pennsylvania said the same.
- The next largest disparity was in psychiatric units, with 81% of California nurses caring for six patients or fewer but only 56% of New Jersey nurses and 42% of Pennsylvania nurses reporting the same.⁸¹

It is not clear how the staffing situation in New York hospitals compares with these states. It would be beneficial if the Department of Health conducted a statewide survey of hospital nursing staff levels pursuant to the New York disclosure law described above, with guidance to hospitals on how to respond to ensure comparability of results and an auditing of at least a random sample for accuracy.⁸² But the information would still be significantly misleading, because it would still be based on averages and it would still leave open the question about the actual *range* of staffing levels that occurs.

⁸⁰ California Department of Health Services Final Statement of Reasons, p. 18, Table 3a.

⁸¹ L. Aiken, *et al.* (2010), *supra*, Table 2. The survey, conducted two years after the California ratios took effect, involved 9,257 RNs in California (353 hospitals), 5,818 RNs in New Jersey (73 hospitals) and 7,261 RNs in Pennsylvania (178 hospitals). The researchers noted that while nurse self-reports of workloads may be prone to some biases, their prior research had shown such data to have “considerable predictive validity,” and, unlike administrative measures of staffing, allowed the researchers to focus specifically on staffing at the patient bedside. *Id.*

⁸² New York’s Nursing Care Quality Protection Act states that hospitals must provide the required information on request to any state agency responsible for licensing or overseeing the facility. PHL §2805-t(2). New Mexico recently adopted a law (HM 98) requiring its health department to conduct a survey of nurse-to-patient ratios at hospitals in the state.

PART THREE: FINDING THE RIGHT NUMBER: AREAS OF CONSENSUS AND VARIANCE

Hospitals make reasoned predictions about staffing needs on a regular basis, unit by unit, because it is necessary for budgetary and personnel planning purposes. In New York, hospitals must have a written nursing plan, developed by the Director of Nursing and approved by the hospital, regarding the types and numbers of nursing staff needed to provide care.⁸³ Nevertheless, while the federal CMS has a set of general recommended staffing levels for nursing homes and also states specific “expected” staffing levels based on resident nursing care needs (acuity) for each nursing home for RNs, LPNs and total nursing care,⁸⁴ no such federal guideline exists for hospitals. Federal rules only require hospitals certified to participate in Medicare to have “adequate” numbers of staff “to provide nursing care to all patients as needed.”⁸⁵ With only very limited exceptions for certain specialized units (as explained below), New York State regulation 10 NYCRR §405.2(f)(7) echoes this approach, stating generally that hospitals must “have available at all times personnel sufficient to meet patient care needs.”

Developing benchmark targets or minimum floors depends on the type of care provided and likely variations in workload. The Institute of Medicine’s 2004 report urged that nursing staff decisions should, among other considerations, involve direct-care staff in the planning process and provide for “elasticity” or “slack” within each shift to accommodate unpredicted variations in patient volume and acuity.⁸⁶ Providing sufficient staff for “elasticity” is important. As one nurse and author observes:

Say a nurse can’t come in because of a family emergency. Then another nurse becomes ill and has to go home. The charge nurse will call around to other staff members, trying to find last-minute replacements. But sometimes there’s no one to come in and no nurses available at the last minute to “float” to the understaffed unit. The lower the ratio, the more likely the nursing staff will be able to cover if and when personnel suddenly become available.⁸⁷

For hospitals, even within the same unit, the severity of a patient’s condition and need for care (“patient acuity”) can vary. Responsible planners err on the side of caution in determining staff needs.

Erring on the side of caution is also important because of another workload variable that can occur within an individual hospital unit shift – the frequency of patient turnover. One nurse noted:

It’s not just the number of patients I manage. It’s also how often there’s a change in patients during a shift. High patient turnover means that you have

⁸³ 10 NYCRR § 405.5(a)(1).

⁸⁴ See CMS, webpage, “Long Term Care Minimum Data Set (MDS)” (<http://www.cms.gov/Research-Statistics-Data-and-Systems/Files-for-Order/IdentifiableDataFiles/LongTermCareMinimumDataSetMDS.html>, accessed 7/27/15); and CMS, “Expected and Adjusted Staff Time Values Data Set – Updated February 2015” (spreadsheet dataset) (<http://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/CertificationandCompliance/FSQRS.html>).

⁸⁵ 42 CFR § 482.23(b).

⁸⁶ Institute of Medicine (2004), *supra*, Recommendation 5-2.

⁸⁷ Theresa Brown, Opinion editorial, “Is there A Nurse in the House?” *New York Times* (June 18, 2010) (<http://www.nytimes.com/2010/06/19/opinion/19brown.html>, accessed 7/27/15).

to manage multiple transfers or discharges and also continually get oriented to new patients with new needs. A shift with high turnover is a lot harder to manage than a shift where the patient population is stable.⁸⁸

This concern is borne out by research. A study found that the risk of death among patients increased with increasing exposure to shifts with high turnover of patients, with the risk increasing by four percent for each high-turnover shift to which a patient was exposed. The researchers commented that these results suggest that both target and actual staffing should be adjusted to account for the effect of high patient turnover.⁸⁹ The same number of nurses, even though standardized by the number of occupied beds, may have very different experiences under conditions of fluctuating rather than stable patient presence in the unit.

Information is scant and some would argue that there are no specific evidence-based minimum staffing ratios,⁹⁰ but some examples do exist of publicly disclosed efforts to provide reasonable benchmarks for target staffing levels and for acceptable minimum staffing levels. This report identifies examples from an Institute of Medicine report, individual New York hospitals' statements, a limited statute in Massachusetts, and a more detailed statute and regulatory process in California⁹¹ that involved a public comment period in which the three main nurses' organizations in the state and the largest hospital association submitted specific proposals.⁹²

Interestingly, the areas of agreement and disagreement regarding safe staffing levels for hospital care may reflect a tendency among hospital leaders to underappreciate the time needed to do nursing care tasks properly. It appears that the greatest amount of consensus between hospitals and nurses associations involves hospital units with a smaller volume of patients present at a time, and in which doctors play a larger and more active role, while the greatest amount of disagreement involves hospital units with larger volumes of patients where nurses are the primary caregivers and doctors visit the area only very occasionally.

⁸⁸ Interview of nurse who functions as a "floater" among different units as needed, Dec. 15, 2014.

⁸⁹ J. Needleman, *et al.* (2011), *supra*. The researchers defined a shift as having a high turnover if the rate was greater than or equal to the mean plus 1 standard deviation for the day-shift turnover for that unit.

⁹⁰ T. Lang, *et al.*, "Nurse-patient ratios: A Systematic Review on the Effects of Nurse Staffing on Patient, Nurse Employee, and Hospital Outcomes," *J Nurs Adm.* 34(7-8):326-37 (2004); S. Clarke, "The Policy Implications of Staffing-Outcomes Research," *J Nurs. Adm.* 35:17-9 (2005).

⁹¹ Under the California regulations, only licensed nurses (RNs and LPNs) who provide direct patient care are included in the ratios and averaging is not allowed. California Department Health Services Final Statement of Reasons, p. 20.

⁹² California Department of Health Services, "Final Statement of Reasons" for regulations pursuant to AB 394, Aug. 25, 2003 (hereafter, "California Department of Health Services Final Statement of Reasons"), p. 6.

A. Areas of Consensus Between Hospitals and Nurse Associations in Hospital Staffing

The areas of greatest consensus between hospitals and nurse associations regarding nurse staffing levels are in surgical units, intensive care units and, to a slightly lesser extent, labor-and-delivery units. These are units with a smaller volume of patients present at a time, and in which doctors play a more active role. It is possible that, as a result, hospital executives are more aware of the specific nursing care tasks needed in these units.

An early indication of this awareness was the Institute of Medicine's 2004 report, which specifically urged only that hospitals should have one licensed nurse for every two patients in ICUs.⁹³ During the California rulemaking, there was consensus on that point and on operating room staffing (a 1 : 1 ratio), and a close compromise on labor-and-delivery units (1 : 1.6 nurses proposal, 1 : 3 hospital proposal, and 1 : 2 final California rule.)⁹⁴ The two specialized areas in which the NYS Department of Health rules provide minimum nurse-to-patient ratios reflect this awareness, requiring the following:

Burn Units/Centers	RN ratio of 1 : 2 for intensive care patients; ⁹⁵
Live Adult Liver Transplants	RN ratio of 1 : 2 for intensive care and post-anesthesia; ⁹⁶

Similarly, the State of Massachusetts passed a law in mid-2014 requiring that the number of patients assigned to a nurse working in an ICU must be limited to no more than two.⁹⁷

As examples in New York of hospital awareness regarding ICU staffing, the specialized Mount Sinai Coronary Care Unit (CCU) states that its nursing staff care for either one or two patients “in order to deliver personalized nursing care”; Strong Memorial Hospital in Rochester reports an ICU nurse-to-patient ratio of 1 : 2; and New York Methodist Hospital reports a nurse-to-patient ratio of 1 : 1 in its Cardiothoracic ICU.⁹⁸ The study comparing New Jersey and Pennsylvania nurse staffing levels similarly found that the nurse-to-patient ratio was nearly identical in all three states for nurses working in intensive care units and in labor/delivery.⁹⁹

⁹³ Institute of Medicine (2004), *supra*, Recommendations 5-1 and 5-3.

⁹⁴ California Department of Health Services Final Statement of Reasons, pp. 7-11; California Code of Regulations, 22 CCR § 70217(a).

⁹⁵ 10 NYCRR § 405.22(d)(1)(ii)(b).

⁹⁶ 10 NYCRR § 405.31(p)(5)(i).

⁹⁷ Massachusetts's law requires hospitals to create an acuity tool to assess whether an ICU nurse is assigned to one or two patients. The state's health policy commission must create a method for public reporting on compliance. M.G.L. Ch. 222, §231, inserted by Ch. 155, Acts of 2014. The Commission adopted regulations on June 10, 2015, which require the acuity tool to be developed by March 31, 2016 for academic hospitals and January 31, 2017 for community hospitals. See <http://www.mass.gov/anf/docs/hpc/20150722-commission-document-board-minutes-for-june-10-2015.pdf>, and <http://commonhealth.wbur.org/2015/06/final-icu-nurse-staffing-rules>, accessed 7/27/15.

⁹⁸ Mount Sinai Hospital website, “Coronary Care Unit” (<http://www.mountsinai.org/patient-care/service-areas/heart/procedures-and-services/coronary-care-unit>); Strong Memorial Hospital website, (<https://www.urmc.rochester.edu/pulmonary/education/clinical-training.aspx>); and New York Methodist hospital website, <http://www.nym.org/For-Patients-and-Visitors/Patient-Stories/Amari-Mendez-Day-Two-2am-Cardiothoracic-Intensive-Care-.aspx> (accessed 7/27/15).

⁹⁹ L. Aiken, *et al.* (2010), *supra*, Table 1.

B. Areas of Greatest Disagreement in Hospital Staffing: Disparate Positions Regarding Staffing Time Needs for Provision of Proper Care

The areas of greatest disagreement involve units with a larger volume of patients and less doctor presence. The proposals put forth during the California rulemaking revealed particularly wide disparities in the perception of what staffing ratios are needed for proper patient care for the following units:

Unit	Nurses' Proposal ¹⁰⁰	Hospitals' Proposal ¹⁰¹	Calif. Final Rule ¹⁰²
Emergency Dept.	1 : 2.7	1 : 6	1 : 4 <i>but 1:2 crit.</i> ¹⁰³
Gen'l Medical/Surg.	1 : 3.7	1 : 10	1 : 5
"Step Down Unit"	1 : 3	1 : 6	1 : 4
Specialty Care Units ¹⁰⁴	1 : 3 or 4	1 : 10	1 : 4
Telemetry Unit	1 : 3	1 : 10	1 : 4
Psychiatric	1 : 4.5	1 : 12	1 : 6 ¹⁰⁵
Sub-acute/rehab	1 : 4.7	1 : 12	not covered

¹⁰⁰ California Department of Health Services Final Statement of Reasons, pp. 7-10. Three nurses' organizations provided proposals, the averages of which are presented here. The California Nurses' Association proposal was based on a calculation, with the average acuity of the ICU as a common numerator and the individual units' calculated acuity indicator as the denominator. The quotient was multiplied by two since a 1:2 ratio for ICUs had been required since 1975 under 22 CCR 70495(e). The product was deemed the middle-range staffing ratio for the unit. The Service Employees International Union (SEIU) Nurse Alliance proposal was based on a consensus developed by committees of 6-10 RNs and LVNs for each unit, ratified by member assemblies. The United Nurses' Associations of California (AFSCME) proposal was based on recommendations from its leaders based on an assessment of members' input. Note: only one association made a proposal for the specialty care unit. Only two made proposals for the psychiatric unit as a whole; the third association proposed staffing levels of 1:2, 1:3 and 1:5 based on acuity. The proposals were unanimous for intensive care and pediatrics/adolescent units. California Department of Health Services Final Statement of Reasons, pp. 7-11.

¹⁰¹ *Id.*, pp. 10-11. The California Healthcare Association (consisting of over 85% of acute care hospitals statewide) ratios proposal was based on evaluation of hospitals' units functioning with various ratios and consultation with patient acuity system designers, hospital chief executive officers (CEOs) and chief nursing officers, as approved by a majority of the CEOs and chief nursing officers. California Department of Health Services Final Statement of Reasons, pp. 7-11.

¹⁰² California Code of Regulations, 22 CCR § 70217(a). The medical-surgical ratio was phased in. A mandate of 1:6 in 2004 shifted to 1:5 on April 7, 2005. See California Code, § 70217(11). "Step Down" units also shifted from 1:4 to 1:3, and telemetry and other specialty care units' ratios shifted from 1:5 to 1:4, on Jan. 1, 2008. See California Code, § 70217(12).

¹⁰³ The rules allow a minimum of 4 nurses per patient but the ratio must be 1:2 or fewer for critical care patients and 1:1 for critical trauma patients; the skills mix must include at least 1 RN to triage patients. California Code, 22 CCR § 70217(8).

¹⁰⁴ A specialty care unit, under the California rules, provides care for a specific medical condition or patient population, wherein services provided are more specialized than required on medical/surgical units. California Code, § 70217(12).

¹⁰⁵ California did not distinguish between acute and non-acute psychiatric care. One nursing association proposed a 1:2, 1:3 or 1:5 ratio based on a psychiatric patient's acuity.

The very large gap in the proposals between the nurses' representatives and the hospital leadership for the medical/surgical units is particularly difficult to explain. (In its review of actual staffing data, the California health department found that fully 75% of the state's medical/surgical and mixed unit shifts were already staffed at a level of at least 1 : 6 or patients per licensed nurse.¹⁰⁶)

This gap in perception of the needs for such units is not unique to California, however. The study comparing California nursing ratios with those of New Jersey and Pennsylvania found that the areas where nurse-to-patient ratios differed the most, similarly, were in medical-surgical units and psychiatric units. The study found that nurses in medical-surgical units generally cared for two more patients, and nurses in psychiatric units cared for one or two more patients (respectively), than those in California.¹⁰⁷ Given that medical-surgical units generally are the largest units in hospitals, this is cause for concern.

As noted above, there is no comprehensive source of information on actual nurse-to-patient ratios in New York hospitals. Two New York regulations establish a minimum nurse-to-patient ratio for care outside of an intensive care or post-anesthesia unit. These are the requirements for:

Burn Units/Centers	RN ratio of 1 : 3 for non-intensive care patients); ¹⁰⁸
Live Adult Liver Transplants	RN ratio of 1 : 4 or higher as needed after transfer of donor; ¹⁰⁹

And, other than the information on the website of the Upstate University Hospital (SUNY) at Syracuse, the review of 95 hospital websites for this report found disclosure of only one other nurse-to-patient ratio, for the Physical Medical and Rehabilitation Unit at the Community-General Hospital (also part of the Upstate University Hospital system) in Syracuse.¹¹⁰

¹⁰⁶ California Department of Health Services Final Statement of Reasons, pp. 35-36. Official data showed that 75% of the hospitals were staffed at a level of 1:5.6 or richer in their medical/surgical units, but its on-site study confirmed a ratio of 1.6 for all medical/surgical and mixed unit shifts, so the more conservative number is used here.

¹⁰⁷ L. Aiken, *et al.* (Table 1) (2010), *supra*.

¹⁰⁸ 10 NYCRR § 405.22(d)(1)(ii)(c).

¹⁰⁹ 10 NYCRR § 405.31(p)(5)(ii). This was originally adopted as part of a set of regulations on precautions to follow in liver transplant operations and caring for liver donors. See Letter from Wayne Osten to DOH Commissioner, https://www.health.ny.gov/professionals/hospital_administrator/letters/2004/administrator/2004-02-26_new_regulation_adult_liver_transplant.pdf

¹¹⁰ See Community-General Hospital of Greater Syracuse (Upstate University Hospital) website, <http://www.upstate.edu/nursing/units/downtown/pmr.php>.

C. One New York Public Hospital’s Disclosure of Nurse-to-Patient Ratios and the Limitations of the Data

The Upstate University Hospital (SUNY) in Syracuse provides public information regarding its hospital staffing levels, listing on its website the actual staffing levels on a unit-by-unit basis. At times it has also listed its nurse staffing plan’s targets for each unit. Its Nursing Quality measures home page states:

[The Nurse Staffing Plan] shows the number of nursing staff members that the hospital plans for each area. The staffing plans are based on national best practices, the severity of the patients’ illnesses, and a prediction of how many patients will be treated.¹¹¹

It calculates nurse-patient ratio as 24 hours divided by “RN Hours per Patient Day” for each unit.

COMPARISON OF SUNY NURSE STAFFING GOALS & CALIFORNIA MANDATES WITH STAKEHOLDER PROPOSALS MADE DURING CALIFORNIA RULE-MAKING PROCESS¹¹²

<i>Unit type</i>	<i>SUNY Upstate 2014 Targets</i> ¹¹³	<i>California Regulations</i> ¹¹⁴	<i>Average of CA Nurse Assns Proposals</i>	<i>Proposal of CA Hosp Assn</i>
Intensive Care (ICUs)	1 : 1.5	1 : 2	1 : 2	1 : 2
Pediatrics/Adolesc.	1 : 3.1	1 : 4	1 : 3	1 : 6
Gen’l Med/Surg	1 : 3.8	1 : 5	1 : 3.7	1 : 10
Specialty Care Unit Oncology	1 : 3.8 (orthopedic) 1 : 3.7	1 : 4 ---	1 : 3 1 : 4	--- 1 : 10
Sub-acute/transitional	1 : 4.8 (Rehab1)	---	1 : 4.7	1 : 12
Psychiatric	1 : 4.9	1 : 6	1 : 4.5	1 : 12

The information, however, is not independently audited, and the Public Employees Federation, which represents nurses at the hospital, has raised numerous concerns about staffing levels. In 2014, the union submitted a complaint to the Department of Labor alleging incidents in which staffing had

¹¹¹ Upstate University Hospital website, “Nursing Quality” measures home page, available at http://www.upstate.edu/hospital/quality_care/nursing_quality/, accessed 7/27/15).

¹¹² Types of hospital units for which no ratio is presented are denoted with three dashes (“---”).

¹¹³ A copy of the unit-by-unit Nurse Staffing Plan for the SUNY Upstate University Hospital for 2014 was downloaded by this report’s author on December 30, 2014 from <http://qoc.upstate.edu/NurseStaffingDisplay.cfm>. See Appendix A for a listing of the facility’s actual nurse staffing levels for various units as recorded for the first quarter of 2015.

¹¹⁴ California Code of Regulations, Title 22 (“Social Security”), Div. 5, Chap. 1 (“General Acute care Hospitals”), §70217 (“Nursing Service Staff”). See § 70217 (1), (3), (4), (6), (7), (8), and (9).

become so sparse in certain areas that nurses had been denied a meal break.¹¹⁵ Thus, while public disclosure is important, it must be backed up by independent auditing to ensure that the information is accurate and not misleading.

Moreover, as noted above, quarterly averages can mask problematic “lows” in staffing levels that occur over time. Such “lows,” even though they may be sporadic, can present risks for patient safety when nurses cannot devote sufficient attention to individual patients. Staffing level data reporting is incomplete if it does not include disclosure of the minimum allowable staffing level that can occur at any time.

¹¹⁵ Interview of Roberta Stafford, Public Employees Federation Council Leader, Division 320, June 11, 2015.

PART FOUR:

MEASURING BENEFITS FROM A SPECIFIC CHANGE – THE STRENGTHS AND LIMITS OF INFORMATION FROM THE CALIFORNIA EXAMPLE

While one would think that the California staffing mandate would provide ideal conditions for measuring a clear before-and-after impact from increasing nursing staff levels, such measurements have been challenging to conduct because of the varied impacts of the rules among hospitals. Measuring results from medical-surgical units – which constitute the largest units in most acute care hospitals – is particularly hard because the majority of such units already met or nearly met the ratios before they took effect. While the mandates did not begin to take effect until 2004, the underlying law was passed in 1999 and the specific nurse-to-patients ratios were set by regulation in 2002 after lengthy review, giving hospitals ample warning. So, while the mandate resulted in an average change in medical-surgical units from 1998 through 2007 of one fewer patient per nurse,¹¹⁶ roughly half or more of the hospitals were already in compliance by the time the ratios took effect.¹¹⁷

An evaluation of studies conducted on the California experience must consider that:

- Studies have used varying “baseline” years for comparing before-and-after impacts;
- The “after” year is also important because the ratios for the medical-surgical units, telemetry and step-down units were phased in between 2004 and 2008; and,
- The actual impact of the ratio requirements was not felt evenly throughout the system, but rather was greater in hospitals with lower initial levels of staffing.¹¹⁸

Studies of the California nurse-to-patient ratios, not surprisingly, reveal that its rules did improve care in some important ways that can be documented – but not for every outcome measure -- and that measuring before-and-after impacts can be challenging without a clearly delineated baseline and a method to account for hospitals that did not have to make significant staffing changes to meet the rule.

¹¹⁶ M. McHugh, *et al.* (2012), *supra*, Figure 1 and Table 2.

¹¹⁷ One study found that, by the time the California Department of Health Services announced the final ratios in 2002 (two years before the effective date), 45% of all adult acute care hospitals had nurse-to-patient ratios in their medical-surgical units already meeting the mandates. M. McHugh, *et al.*, “Impact of Nurse Staffing Mandates on Safety-Net Hospitals: Lessons from California,” *The Milbank Qtrly* 90(1):160-186 (Mar. 2012), Table 2. Another 2002 study put the estimate for pre-mandate compliance in such units even higher, at 64%. J. Coffman, *et al.*, “Minimum Nurse-to-Patient Ratios in Acute Care Hospitals in California,” *Health Affairs* 21(5):53-64 (2002). Not surprisingly, approximately half of the thousands of California hospital nurses surveyed two years after the mandated ratios took effect reported that the nurse-to-patient ratios had not changed in their hospitals after implementation. L.H. Aiden, *et al.* (2010).

¹¹⁸ M. McHugh, *et al.* (2012), *supra*. By way of comparison, after the State of Florida in 2001 enacted an increase for minimum levels of RN/LPN staffing and CNA staffing, a study found no significant change based on the new standard for RNs/LPNs, since existing ratios in 2002 generally already met the new standard, but every additional hour of CNA time per resident day was associated with a 10% improvement in the total deficiency score. K. Hyer, *et al.*, “The Influence of Nurse Staffing Levels on Quality of care in Nursing Homes,” *Gerontologist* 51(5):610-616 (Oct. 2011) (Table 2). *See also* K. Hyer, *et al.*, “Florida’s efforts to Improve Quality of Nursing Home Care Through Nurse Staffing standards, Regulation, and Medicaid Reimbursement,” *J Aging Soc Policy* 21(4):318-37 (Oct.-Dec. 2009) (2009), p. 332.

A. Positive Impacts on Specific Health Outcomes Documented for Patients and Nursing Staff

As noted above, under the California regulations, licensed nurses on a medical-surgical floor may be assigned no more than five patients at a time.¹¹⁹ Other ratios are mandated for intensive care, emergency room care and other types of hospital units. Studies have documented positive impacts on certain specific health outcomes associated with the California ratios.

1. Significant improvement in “failure to rescue” rates and on mortality rates following a complication

A 2013 study that examined the impact of the California nursing ratios on “Failure to Rescue” has particularly useful results because it *differentiated among hospitals based on their pre-mandate level of compliance with the California regulation* (an important approach, as noted above). Failure to rescue, as noted above, is a measure of incidents in which a patient dies or suffers a permanent disability after developing a complication in the hospital such as pneumonia, sepsis, shock, cardiac arrest, deep vein thrombosis/pulmonary embolism or other potentially preventable condition. The study, which compared 175 California hospitals with 425 hospitals in 12 other states, not only differentiated among California hospitals based on pre-mandate compliance but also developed measures of acuity-adjusted nurse staffing to more accurately measure staffing relative to patient need. In addition, it used a period prior to 2002 (when the draft regulations were announced) as its baseline and included the second phase of implementation of the regulations. The study found that “failure to rescue” rates improved significantly more in certain California hospitals than in comparable hospitals in other states. The greatest improvements were found in hospitals with the weakest and the strongest pre-mandate staffing ratios.¹²⁰

A study that differentiated among hospitals based on pre-compliance – and also used a baseline year prior to when the draft regulations were announced – found that there was a significantly greater improvement (a 2.4% decrease for each added hour of RN care per patient day) in the incidence of mortality following a complications by the final post-regulation period for hospitals with the lowest ratios pre-mandate and for hospitals in the middle ranges of compliance as well (2% and 1.7% decreases in mortality, respectively).¹²¹ There was also a significant decrease in pulmonary embolism/deep vein thrombosis for the hospitals with the lowest ratios pre-mandate, but not a significant impact for the middle-range hospitals. It should be noted that changes for postoperative sepsis and respiratory failure, however, were mixed.¹²²

¹¹⁹ Most provisions took effect Jan. 1, 2004, but a few provisions delayed by litigation did not take effect until April 2005. J. Leigh, *et al.*, “California’s Nurse-to-Patient Ratio law and Occupational Injury,” *Int Arch Occup Environ Health* (2014). See also, P. Tevington, “Professional Issues: Mandatory Nurse-Patient Ratios,” *MEDSURG Nursing* 20(5): 265-68 (2011).

¹²⁰ B. Mark, *et al.*, “California’s Minimum Nurse Staffing Legislation: Results from a Natural Experiment,” *Health Serv Res* 48(2 Pt 1):435-54, 447-48 (2013).

¹²¹ J. Spetz, *et al.*, “Using Minimum Nurse Staffing Regulations to Measure the Relationship Between Nursing and Hospital Quality of Care,” *Med Car Res & Rev* 70(4):380-399 (2013), p. 390.

¹²² *Id.*, p. 393.

2. Significant positive impacts on emergency room care

The impact of California's nursing ratios on hospital emergency room care has been measured in three individual hospitals. In a study of 2008 data from the emergency rooms (ERs) of two California institutions – an urban teaching medical center and a suburban community hospital – researchers found that throughput measures of both wait time and emergency department care time were significantly shorter when the emergency department nurse staffing ratios were within state-mandated levels. (Rather than a comparison of aggregate data over time, these researchers compared results from compliant and non-compliant shifts. The ERs did not comply with the rules at all times, but when they did achieve compliance (approximately 90% of the time), they saw significant benefits.

- Researchers found that 10% of all patients who waited for emergency department services did so at a time when the emergency department overall was at an out-of-ratio status, having wait times that were 16% longer than those who arrived when the facility was in-ratio.
- They also found that 7.3% of patients were treated by a nurse who was out-of-ratio for more than 20 minutes during the patient's care time, and that for these patients the emergency department care time was 37% longer than for those patients whose nurse was in-ratio.¹²³

A separate study of a single emergency department – which only compared data from 2003 with 2004 – found that while wait times rose after the mandated ratios took effect because the hospital made patients wait while it moved more nurses to the area to meet the rules at busy times (possibly indicating poor planning regarding trends in the facility's use), the emergency department reduced the period it took to administer the first dose of antibiotics to pneumonia patients - an important process quality measure. The rate of patients leaving without being seen also was reduced. The medication error rate and time for administering aspirin for acute coronary syndrome, however, did not change.¹²⁴

These two studies indicate that even though it may be challenging at times to manage staffing numbers under the variable conditions of emergency room care, the benefits of doing so are significant.

3. Nurses and supervisors perceive overall improvements in care

As noted in Part Two of this report, some important quality of care factors are not documented and therefore cannot be measured as outcomes. In the 2010 survey of over 9,000 California nurses, however, the majority of staff nurses, nurse managers/direct supervisors, middle or executive level administrators believed that the California requirements improved hospital care. More specifically, 74% of staff nurses, 68% of front-line nurse managers or assistant nurse managers, and 62% of mid-level or executive-level nursing administrators agreed that the quality of care in California hospitals

¹²³ T. Chan, *et al.*, "Effect of Mandated Nurse-Patient Ratios on Patient Wait Time and Care Time in the Emergency Department," *Academic Emerg Med* 17(5):545-552 (2010).

¹²⁴ L. Weichenthal and G. Hendey, "The Effect of Mandatory Nurse Ratios on Patient Care in an Emergency Department," *J Emerg Med* 40(1):76-81 (2011) (e-published Apr. 3, 2009).

had increased.¹²⁵ Thus, while many measures of the impact of the California mandate on the daily quality of patient care have not yet been examined, such as the impact on palliative care, the majority of frontline nurses and their supervisors perceived an improvement in care.

4. Significantly reduced on-the-job injuries and illnesses for nurses

As noted above, a 2014 study of the impact of California’s nurse-to-patient ratio law on occupational injury found that the ratios were associated with 55.57 fewer occupational injuries and illnesses per 10,000 RNs per year, which is 31.6% lower than the number of injuries otherwise expected based on comparison with national averages. It also estimated that the reduction in injuries and illnesses for LPNs was 33.6% lower than the number of injuries otherwise expected based on comparison with national averages.¹²⁶ The study used the years 2000-2003 for its baseline data for comparison with 2005-2008, but also comparing California’s rates with that of other states.

B. Studies Not Documenting Changes in Certain Outcomes

Some studies of California data found post-regulation impacts for one measure but not another, or no impacts at all. Questions have been raised about the role of pre-compliance levels, increased detection from greater surveillance and other factors in affecting these measures.

1. No positive impact found for respiratory failure or post-operative sepsis; anomalous rise in diagnosis of infection may be due to greater detection

A study that differentiated among California hospitals based on pre-mandate compliance with ratios identified a significant increase in diagnosis of hospital-acquired infections at hospitals within the second highest category of pre-mandate compliance. The authors commented that this “may reflect increased detection of these events, rather than an actual increase in their numbers,” and that generally where increased nurse staffing was associated with diagnosis of more complications, it was also associated with shorter lengths of hospital stay.¹²⁷

Nevertheless, no specific confounding factor was suggested with regard to the fact that this same study found no significant improvements in incidents of respiratory failure or postoperative sepsis after the mandate took effect.¹²⁸

2. Conflicting information within a study of pediatric cardiac surgery

A study of impacts on pediatric cardiac surgery programs in California producing an odd mix of positive and negative results may have been affected the phenomenon that a drop in one adverse

¹²⁵ L. Aiken, *et al.* (2010), *supra*.

¹²⁶ J. Leigh, *et al.*, (2014), *supra*.

¹²⁷ B. Mark, *et al.* (2013), *supra*, at 450.

¹²⁸ B. Mark, *et al.* (2013), pp. 448

outcome can lead to a statistical rise in another. It found a post-mandate *decrease* in mortality ratios that was better than occurred other states, yet also found an *increase* in complication ratios. The authors questioned whether the increase in complication ratios could reflect that cardiac surgical patients who would previously have died in 2003 survived in 2006 but experienced complications.¹²⁹

3. No positive impact on falls and pressure ulcers found yet significance unclear due to choice of baseline and other factors.

Two studies (released in 2005 and 2007) found no significant improvement from implementation of the California ratios on either falls or pressure ulcers, but the meaning of the studies is not clear. Both studies used the first and second quarters of 2002 as their baseline for comparison.¹³⁰ As noted above, many facilities had already reached a level of compliance before the start of this study period, which may have affected the results since neither study differentiated among hospitals based on their pre-compliance.¹³¹ The 2005 study also evaluated only the impacts of the first phase of the regulations (pre-2005).

The use of pressure ulcer data as an indicator of ratio impact also is questionable; another researcher rejected it, determining that it was not a reliable predictor of outcomes because of increased vigilance due to a statewide prevention initiative and the news of CMS's plans to leverage financial penalties on hospital-acquired pressure ulcers.¹³² The meaning of these studies therefore is not clear.

4. A finding of no impact on failure to rescue rates conflicts with a later study and does not address a potentially positive implication of its baseline data

A 2012 study of “failure to rescue” rates in 294 California medical/surgical units, which – like the 2013 study described above -- did compare hospitals that were below–ratio pre-mandate with hospitals that already met or exceeded the requirements,¹³³ had results that conflict with the 2013 study and also may be misconstrued. This study found that all California hospitals had comparable rates of improvements in failure to rescue rates regardless of pre-mandate compliance. While the authors made a broad statement that “we find no evidence of a causal impact of the law on patient

¹²⁹ P. Hickey, *et al.*, “Statewide and National Impact of California’s Staffing Law on Pediatric Cardiac Surgery Outcomes,” *J Nurs Admin* 41(5):218-225, 223 (2011).

¹³⁰ N. Donaldson, *et al.*, “Impact of California’s Licensed Nurse-Patient Ratios on Unit Level Nurse Staffing and Patient Outcomes,” *Policy Polit Nurs Pract.* 6(3):198-210 (2005) (examined the 1st and 2d quarters of 2004); L. Bolton, *et al.*, “Mandated Nurse Staffing Ratios in California: A Comparison of Staffing and Nursing-Sensitive Outcomes Pre- and Postregulation,” *Policy, Politics & Nurs Pract*, 8(4):238-250, 240 (Nov. 2007). *See also* L. Aiden, *et al.* (2010), noting that the literature is inconsistent on the association between hospital nurse staffing and falls and pressure ulcers.

¹³¹ Another researcher defined the “pre-regulation period” as prior to 2002, documenting that nurse hours per patient day rose between the pre-2002 period and “transitional” period of 2002-2003. J. Spetz, *et al.* (2013), *supra*, p. 386.

¹³² A. Cook, *et al.*, “The Effect of a Hospital Nurse Staffing Mandate on Patient Health Outcomes: Evidence from California’s Minimum Staffing Regulation,” *J Health Econ* 31(2):340-48 (Mar. 2012); *see* N. Donaldson and S. Shapiro, “Impact of California Mandated Acute care Hospital Nurse Staffing Ratios: A Literature Synthesis,” *Policy Politics Nurs Pract* 11:184, 195 (2010).

¹³³ A. Cook, *et al.*, *supra*.

safety,” they also make it clear that their study addressed only one measure of patient safety.¹³⁴

But perhaps more importantly, the study did not explore a potential implication of its baseline data. It had documented that in the pre-mandate years, failure to rescue rates generally were higher in units with worse nurse-to-patient ratios.¹³⁵ This appears to indicate that the hospitals with worse ratios had fallen behind better-staffed hospitals over some period in their trajectory of efforts to improve “failure to rescue” rates. If it is correct that these previously understaffed hospitals, after adding nurses to meet the ratios, were then able to keep pace with previously better-staffed hospitals in rate of improvement during the first two years post-mandate, this would appear to be a positive development.¹³⁶

A final question in evaluating the California experience, given the number of years involved in designing and implementing the ratios, is the extent to which patient acuity – and therefore nursing needs – may have risen during the periods in which data was collected for various studies. A review of 12 studies regarding the ratios impact noted that the Case Mix Index (a metric used to indicate patient acuity) rose in California during the period in which the ratios were implemented. The authors of the review observed that “an unappreciated impact” of California’s ratios may be that patient care outcomes did not worsen given the rise in patient acuity.¹³⁷

A fair analysis of the California experience recognizes that some studies show significant positive impacts on certain specific outcomes from the increases in nurse staffing, while other studies of certain specific outcomes did not identify impacts – and issues regarding proper baselines for comparison, differentiated levels of pre-compliance and the lengthy planning and phasing-in of ratios present challenges for studies attempting to conduct before-and-after measurements that must be considered in evaluating results. This information also should be considered in the context of the substantial evidence from cross-sectional and longitudinal studies of the impact of nursing staff levels on quality of care, described in Part Two of this report.

¹³⁴ The authors had considered looking at impact on pressure ulcers but decided it was less useful as a measuring tool. *Id.*

¹³⁵ For example, in their analysis of 2000-2002 data, the study found that an increase of one patient per nurse was associated with approximately a 2% rise in the rate of failure to rescue. *Id.*

¹³⁶ Noting that their conclusion of no impact is at odds with the existing “significant positive cross-sectional relationship between nurse-to-patient ratios and failure to rescue,” the study authors suggested that “apparently those hospitals that are most effective in ensuring patient safety generally find it optimal to employ more nurses per patient.” *Id.* Put another way, hospitals with initially stronger nurse-to-patient ratios may also have been more dedicated to quality in other ways and thus achieved comparable reductions in failure to rescue despite no significant change in staffing. (This is also a potential explanation for the finding of the first study (B. Mark, *et al.*, 2013) that the greatest improvements in failure to rescue rates were found among hospitals with the weakest and also the strongest pre-mandate staffing ratios.)

¹³⁷ N. Donaldson and S. Shapiro (2010), p. 196, citing Y. Antwi, “A Bargain at Twice the Price? California Hospital Prices in the New Millenium,” *Forum for Health Econ & Pol* 12(1):1-21, 11 (2009).

PART FIVE:
THE INCREASING COST-EFFECTIVENESS OF SUFFICIENT STAFFING LEVELS

While a full financial analysis of staffing ratios for hospitals or nursing homes is beyond the scope of this report, a number of benefits arise from a proper staffing ratio that can have a positive impact on a facility's "bottom line." Also, changes in reimbursement practices are – finally – placing a higher value on safety in healthcare and penalizing avoidable adverse outcomes. Together, these factors are making it more and more cost-effective to invest in the frontline of healthcare to ensure that sufficient staffing is in place to provide proper care.

A. Cost Savings and Societal Benefits for New York State from Sufficient Staffing Levels

Savings in our health system occur when adverse patient outcomes are prevented.¹³⁸ A 2009 analysis of the monetary benefit of saved lives found that the value of lives saved per thousand hospitalized patients was 2.5 times higher than the increased cost of one additional RN per patient day in ICUs; 1.8 times higher in surgical units; and 1.3 times in medical units.¹³⁹

Looked at another way, the amount of investment in nursing staff required to save a life is reasonable compared to the amount spent in other areas of hospital patient safety. A 2005 cost-effectiveness analysis from the institutional perspective comparing nurse-to-patient ratios ranging from 1:8 to 1:4 found that reducing the number of patients per nurse presented acceptable costs per life saved. The analysis found that:

- While eight patients per nurse was the least expensive ratio, it was also associated with the highest patient mortality.
- It found that dropping the number of patients per nurse from seven to six cost \$63,900 per life saved, and from six to five cost \$92,800 per life saved.
- Even the incremental cost-effectiveness of a ratio of 1:4 did not exceed \$136,000 per life saved.¹⁴⁰

By way of comparison, it noted that thrombolytic therapy (the breakdown of blood clots by pharmaceutical means) in a case of acute myocardial infarction (heart attack) costs \$182,000 per life

¹³⁸ E. Anderson, et al., "Linking Economics and Quality: Developing an Evidence-based Nurse Staffing Tool," *Nursing Admin Qtrly* (2011); T. Shamliyan, et al., "Cost Savings Associated with Increased Staffing in Acute Care Hospitals: Simulation Exercise," *Nursing Econ* (2009); see also, L. Unruh, "Nurse Staffing and Patient, Nurse and Financial Outcomes," *The American J of Nursing* 108(1):62-71 (2008).

¹³⁹ T. Shamliyan, et al. (2009), *supra*, pp. 307-09.

¹⁴⁰ M. Rothberg, "Improving Nurse-to-Patient Staffing Ratios as a Cost-Effective Safety Intervention," *Med Care*, 43(8):785-791 (Aug. 2005). Cost figures are in 2003 dollars.

saved and routine cervical cancer screening with PAP tests cost \$434,000 per life saved (in 2003 dollars). It concluded that the investment in better staffing ratios was cost-effective.¹⁴¹

Actual costs may be greater than these studies suggest, and can have significant implications for the State Medicaid Program as well as other public and private health benefit programs. One review of costs associated with surgery-related infections found that the total excess payments during the 90-day period post-discharge were 28% larger than the excess payments incurred during the initial hospitalization.¹⁴² Another study found that increasing RN non-overtime staffing by 0.75 hours-per-patient day would cost hospitals \$145.74 per patient for the increased RN staffing costs (assuming the hospital would not have gained any revenue from an unreduced but preventable readmission), but would save healthcare bill payers \$607.51 per hospitalized patient from reduced post-discharge use.¹⁴³ Thus, the societal health costs from adverse events can persist long after the patient leaves the hospital.

B. Several Factors Are Increasing the Potential for Stronger Nurse Staffing Levels to Provide Offsetting Financial Benefits for Hospitals

For hospitals that currently have lower levels of nurse staffing, a move to hire more nurses would require more investment in the “frontline” of care, which may entail a need to look more closely at other areas of spending. A study of California data from 2000 to 2006, which categorized hospitals based on level of pre-compliance with the mandated ratios, found that:

- The hospitals with the worst ratios (which included the highest proportion of for-profit hospitals), did not experience a statistically significant impact on their operating margin, possibly because they increased LPN staffing more than the hospitals in the other categories.
- The operating margins for hospitals in quartile 4, which had the best pre-compliance status, also were not adversely affected.
- In contrast, hospitals in the two middle-staffing quartiles – which contained higher proportions of public hospitals and higher percentages of days covered by Medicaid (16-17% versus 15% for quartile 1 and 13% for quartile 4) – did experience significant declines in operating margins.

This study concluded that “increasing reimbursement to assure adequate staffing to keep patients safe may be required.”¹⁴⁴ A much more current and comprehensive analysis, however, is needed due to the changing face of healthcare cost reimbursement.

¹⁴¹ M. Rothberg, *et al.*, *supra*.

¹⁴² W. Encinosa and F. Hellinger, “The Impact of Medical Errors on Ninety-Day Costs and Outcomes: An Examination of Surgical Patients,” *Health Serv Res* 43(6):2067-2085 (Dec. 2008).

¹⁴³ M. Weiss, *et al.*, “Quality and Cost Analysis of Nurse Staffing, Discharge Preparation, and Postdischarge Utilization,” *Health Serv Res.* 46(5): 1473–1494, 1483-86 (Oct. 2011).

¹⁴⁴ K. Reiter, *et al.*, “Minimum Nurse Staffing legislation and the Financial Performance of California Hospitals,” *Health Serv Res* 47(3 Pt 1):1030-1050 (June 2012).

Under today's healthcare reimbursement systems, the offsetting financial benefits to hospitals from strong nurse-to-patient ratios may well be increasing. While the 2009 social costs analysis noted above had observed, "Societal benefits from avoided deaths do not necessarily save money for the hospital," this dynamic has been shifting in very recent years. A prescient 2007 report by PricewaterhouseCoopers' Health Research Institute had commented:

Rainmaker roles may change for hospitals.... Traditionally, physicians were rainmakers who brought in revenue, and nurses were overhead. Through new, pay-for-performance programs that focus on clinical quality and patient satisfaction, nurses will have significant impact on the key metrics that will drive reimbursement updates.¹⁴⁵

Recent changes in reimbursement practices by the federal government, New York State government, and private insurers make hospital-acquired conditions and other preventable adverse events in hospitals more costly for hospitals. Improved nurse-to-patient ratios may therefore generate some cost-saving benefits to help offset the investment in staffing. Fewer preventable complications and adverse events may result in:

- (1) Reduced costs of treatment for avoidable adverse events, including "never" events, such as hospital-acquired infections and falls, for which Medicare and Medicaid now refuse payment; and
- (2) Reduced preventable readmissions for which Medicare and Medicaid may apply penalties.

The federal refusal to pay the extra costs of treating patients for "never" events that occur in hospitals was launched beginning October 1, 2008.¹⁴⁶ The impacts of penalties for preventable readmissions is an even more recent phenomenon. Under a program launched in 2012, hospitals are now subject to federal penalties against Medicare payments for failure to reduce their readmission rates. The penalty has increased from year to year.¹⁴⁷ Based on penalty data from CMS, as analyzed by *Kaiser Health News*, roughly four out of five hospitals in New York have been assessed a penalty for fiscal year 2015 because of their high readmission rates, and New York also ranks 12th worst in the nation for the average penalty assessed on Medicare payments to its hospitals.¹⁴⁸ Hospitals in New York also need to improve their readmissions rate because NYS Medicaid payments are subject to reduction under a penalty program that began in fiscal year 2010.¹⁴⁹ In the nine month period from July 2010 through March 2011, excess readmissions penalties under New York's Medicaid program totaled \$34.7 million,

¹⁴⁵ PricewaterhouseCoopers Health Research Inst., "What Works: Healing the Healthcare Staffing Shortage" (2007), p. 2.

¹⁴⁶ See, CMS, Letter to State Medicaid Directors, July 31, 2008 (<http://downloads.cms.gov/cmsgov/archived-downloads/SMDL/downloads/SMD073108.pdf>).

¹⁴⁷ The Hospital Readmissions Reduction Program established under the federal Affordable Care Act applies a penalty for hospitals having an excess number of potentially preventable readmissions. The "excess readmission ratio" is calculated as the risk-adjusted actual readmissions divided by risk-adjusted expected readmissions. See, Patient Protection and Affordable Care Act of 2010, § 3025, adding Section 1886(q) to the Social Security Act (and codified as amended at 42 USC § 1395ww[q] [Supp. V 2011]). The maximum penalty under this program increases from 2% to 3% for fiscal year 2015.

¹⁴⁸ See J. Rau, "Medicare Fines 2,610 Hospitals in Third Round of Readmission Penalties," *Kaiser Health News* (Oct. 2, 2014) (available at <http://kaiserhealthnews.org/news/medicare-readmissions-penalties-2015/>, accessed Jan. 12, 2015).

¹⁴⁹ 10 NYCRR §86-1.37(d) and (e).

with penalties to individual hospitals ranging from zero to \$3.5 million.¹⁵⁰

Additional factors that can offset staffing costs, some of which may result in savings that could accrue in future years rather than the year in which the staffing change occurred, include:

- Reduced Worker Compensation Claims;
- Reduced length of patient stay, for which cost reimbursement may be inadequate; and reduced risks of litigation – due to successful prevention of harm; and
- Reduced staff turnover.

See Table 2 below for information on studies that indicate how these factors may have significant effects on costs. There is currently no comprehensive analysis of cost impacts from increased nurse staffing that includes all of these factors.

¹⁵⁰ NYSDOH, “Potentially Preventable Readmissions for the Period July 1, 2010 Through March 31, 2011 (Initial Model)” (undated) (document received on Jan. 21, 2015, in response to a Freedom of Information request).

TABLE 2
COST-SAVING IMPROVEMENTS LINKED TO NURSING STAFF LEVELS

Cost-saving Improvement	Evidence for link to nursing staff levels
<p>Fewer “avoidable adverse events” Since 2008, CMS’s rules have required it to deny payment for care related to any of 8 conditions that should never occur (so-called “never events”). These include pressure ulcers, falls with injury, catheter-associated urinary tract infections, vascular catheter associated infections, pressure ulcers and falls with injury.¹⁵¹</p>	<ul style="list-style-type: none"> - Part One of this report notes the association between staffing and avoidable adverse outcomes. - A 10% increase in a hospital’s “high–burnout nurses” was associated with an increase of nearly one urinary tract infection and two surgical site infections per 1,000 patients. Hospitals in which burnout was reduced by 30% had a total of 6,239 fewer infections, for an annual cost saving of up to \$69 million.¹⁵²
<p>Fewer “potentially preventable readmissions” (“PPR”) The Affordable Care Act penalizes hospitals with excessive readmission rates. The link to nurse staffing may be related to lack of time for patient training. Researchers found “a path of significant associations from RN staffing to patient-reported quality of discharge teaching, from quality of discharge teaching to patient-reported discharge readiness, and from discharge readiness to post-discharge ED use.”¹⁵³</p>	<ul style="list-style-type: none"> - Hospitals with lower RN staffing levels had 25% worse odds of being penalized for PPRs than comparable hospitals with higher levels.¹⁵⁴ - Increasing RN staffing by 0.75 hours-per-patient day was linked with a 4.4 percentage point drop in probability of readmission, while a rise in RN overtime hours increased the probability of an Emergency Department visit post-discharge.¹⁵⁵ - A survey of California nurses found satisfaction with “time for patient education” improved significantly from 2004 to 2006.¹⁵⁶
<p>Fewer Workers Compensation Claims Workplace strain and injury among healthcare staff can affect productivity, lost work days and staff turnover.</p>	<ul style="list-style-type: none"> - The California ratios were associated with 55.57 fewer occupational injuries and illnesses per 10,000 RNs per year, 31.6% lower than expected based on national averages, and the reduction for LPNs was 33.6% lower than expected.¹⁵⁷
<p>Reduced length of stay and litigation due to prevention of harm Implementing safe staffing levels can reduce a patient’s length of stay. Also, implementing safe staffing levels can reduce a facility’s risk of liability due to successful prevention of harm – both to patients and to staff.</p>	<ul style="list-style-type: none"> - RN hours were inversely related to developing pneumonia, a complication that added 5.1 to 5.4 days to a hospital length of stay and \$22,390 to \$28,505 to hospital costs.¹⁵⁸ - By way of analogy, nursing homes meeting the recommended staffing levels for RNs had a 23% lower rate of litigation; and those that did so for CNAs had a 15% lower litigation rate.¹⁵⁹
<p>Reduced staff turnover costs Researchers state it would be “revenue neutral” to offer each departing nurse “a <i>staying bonus</i> equal to 86% of his or her annual salary or give <i>every</i> nurse on staff a 33% retention supplement <i>every year</i>” (<i>emphasis in original</i>).¹⁶⁰</p>	<ul style="list-style-type: none"> - In hospitals with low nurse-to-patient ratios, nurses were more likely to experience burnout.¹⁶¹ - Hospitals with low nurse retention rates spend, on average, \$3.6 million more than hospitals with high retention rates.¹⁶²

¹⁵¹ The regulations, implemented in October 2008, also included blood incompatibility reactions and certain other errors.

¹⁵² J. Cimiotti, *et al.*, *supra*.

¹⁵³ M. Weiss, *et al.* (2011), *supra*, pp. 1483-86. This study involved nearly 1900 patients and four acute care hospitals.

¹⁵⁴ M. McHugh, *et al.*, “Hospitals with Higher Nurse Staffing Had Lower Odds of Readmissions Penalties Than Hospitals with Lower Staffing,” *Health Aff* 21(10):1740-1747 (2013). This was a study of data from 2,826 hospitals.

¹⁵⁵ M. Weiss, *et al.* (2011), *supra*, pp. 1483-86.

¹⁵⁶ J. Spetz, “Nurse Satisfaction and the implementation of Minimum Nurse Staffing Regulations,” *Policy, Politics & Nurs pract* 20(20):1-7 (2008), p. 4.

¹⁵⁷ J. Leigh, *et al.*, *supra*.

¹⁵⁸ S. Cho, *et al.*, “The Effects of Nurse Staffing on Adverse Events, Morbidity, Mortality, and Medical Costs,” *Nurs Res* 52:71-79 (2003).

¹⁵⁹ C. Johnson, *et al.*, “Predicting Lawsuits Against Nursing Homes in the United States, 1997-2001,” *Health Serv Res.* 39 (6, Part 1):1713-31 (2004). This study examined data for nursing homes in 45 states.

¹⁶⁰ J. Waldman, *et al.*, “the Shocking Cost of Turnover in Health Care,” *Health Care Manage Rev* 29(1):2-7, 6-7 (2004).

¹⁶¹ L. Aiken, *et al.*, *supra*.

¹⁶² PricewaterhouseCoopers Health Research Institute (2007), *supra*, p. 1.

While these cost considerations are encouraging and important, they should not be the only driver of the discussion. Therese Brown, an oncology nurse and the author of *Critical Care: A New Nurses Faces Death, Life, and Everything in Between*, points out:

As hospitals face increasing financial pressure, nurse staffing often takes a hit, because nurses make up the biggest portion of any hospital's labor costs. For patients, though, the moral calculus of the nurses-for-money exchange doesn't add up.... What this discussion of finances misses...is that having enough nurses is not just about dollars and cents. It's about limiting the suffering of human being.¹⁶³

Where costs become an issue in providing safe care, policy makers need to address the cost rather than forego the provision of safe care.

¹⁶³ Theresa Brown, opinion editorial, "When No One Is on Call," *New York Times* (Aug. 17, 2013) (<http://opinionator.blogs.nytimes.com/2013/08/17/when-no-one-is-on-call/?r=0>).

**PART SIX:
PATIENTS NEED MORE INFORMATION ON HOSPITAL NURSING STAFF LEVELS**

A. The Need for Transparency from Hospitals

Patients need more information on hospital nursing staff levels. They are the ones who know:

- The frustration of bells that don't get answered promptly, if at all;
- The questions that they are reluctant even to ask because they feel so bad taking up the time of nurses who appear to be so heavily overworked; and
- The degradation of not being able to be taken to the bathroom when they need to go.

They are the ones who suffer when “patient care” suffers. It affects their health, their bodies. Yet, as noted above, New York’s transparency law does not require posting of daily staffing information. New York hospital patients or their family caregivers are required to write to the hospital – with a 30-day response period – to get information that has been averaged over at least three months and possibly a year. So while these attempts at transparency are steps in a positive direction, they leave the hospital patient and family caregivers with too many unanswered questions.

Instead, the discussion of safe staffing levels often ends up being a dialogue – literally – between just two sides. Hospitals square off against nurses, and the issue ends up becoming a bargaining chip in a labor negotiation. When such an issue between unionized staff and a facility arise, the matter may be resolved through arbitration. While it is important to have these two parties engaged in the discussion, there is a very large and interested group missing at the table – the patients whose care is at issue, and the family members and friends who care about them.

Hospitals should provide patients and their loved ones with immediate access to information, posted in the hospital unit, regarding current nurse staffing ratios, broken down by RNs, LPNs and CNAs and by shift. And the Department of Health should be gathering the data to which it has a right of access under current law and making comparative information publicly available, with auditing of a random sample for verification, on a regular basis so that there is reasonable assurance that information is accurate. In other words, patients should have ready access to meaningful information on hospital nursing staff levels.

B. The Need for Vigilance: Questions That Consumers Should Ask About Nurse Staffing Levels

Ultimately, it is a shame that patients have to worry at all about hospital nursing staff levels. They should be free to base their choices on other, more personal factors such as proximity, a facility's specialty areas, their comfort level and trust in a particular healthcare providers, the overall atmosphere of the facility, and other quality-of-care factors. Basic life-and-death safety should not have to be on the table. Nevertheless, patients and their loved ones must do what they can to become informed.

A hospital patient or the patient's primary support person – perhaps a family member, or a close friend – should make sure to find out answers to the following questions:

- Who is the Registered Nurse (“RN”) taking care of me this shift?
- How many other patients is my RN managing today?
- Is there an LPN also taking care of me on this shift?

If so, how many other patients is my LPN taking care of on this shift?

- Who is the RN who will be taking care of me at night, and how many other patients will this RN be managing?

It is important to get these answers not only for weekday shifts but also for any weekend shifts of hospitalization that the patient may experience.

Vigilance should also be cultivated at the community level. Prospective patients, their loved ones, public officials and community leaders who want to get more complete information should use the existing statute described in Part Two of this report, despite its flaws, to get information on hospital nurse-to-patient ratios. Public officials and civic organizations should also call for further transparency from healthcare facilities in their local area. In addition to nurse-to-patient ratio issues, questions should be asked about readily available EKG technicians and other technical assistance, clerical staff and housekeeping staff per unit.

RECOMMENDATIONS

All hospitals in New York should consistently have nursing staff levels that ensure proper safety and quality healthcare for patients, and the public should have access to useful information to compare hospital staffing levels. To help fill in the public knowledge gap, this report recommends:

1. All hospitals should disclose and post on their websites both their planned and actual RN and LPN staffing ratios. Hospitals should also post the *range* of actual staffing levels that occur in each unit by shift. This data should be independently audited for accuracy.
2. Hospital patients and their loved ones should ask questions about the nurse staffing level in their hospital unit, shift by shift. They should know whether a healthcare worker caring for them is an RN, an LPN or CNA, and how many patients that person is managing.
3. Community vigilance about hospital staffing should be increased. Public officials and civic organizations should gather information on hospital staffing (using the existing disclosure statute despite its flaws) and call for further transparency from healthcare facilities in their local area.

APPENDIX A
 SUNY UPSTATE MEDICAL UNIVERSITY
 NURSE STAFFING DATA FOR SELECTED UNITS
 1st Qtr 2015¹⁶⁴

Unit type	RN Portion of Staff (Staff = RNs, LPNs, HCTs)	LPN Portion of staff	Nurse-to-Patient Ratio (24 RN hrs/Patient Day)
Surg ICU (08E)	95%	0%	1 : 1.3
Med ICU (06H)	94%	0%	1 : 1.6
CardioPulm. ICU (08F)	95%	0%	1 : 1.6
Burn ICU (06E)	96%	0%	1 : 1.8
Pediatrics General (12E)	73%	0%	1 : 3.6
Gen'l Med/Surg (06B)	74%	0%	1 : 3.8
Medicine (10G)	75%	2%	1 : 3.7
Med/Surg (06K)	75%	1%	1 : 3.6
Oncology (10E)	78%	0%	1 : 3.8
Orthopedics (07A)	72%	1%	1 : 3.7
Rehabilitation (02N)	62%	8%	1 : 4.7
Psychiatry (04B)	79%	0%	1 : 5.5

As noted in this report, the ratios presented are averages and may not represent the widest nurse-to-patient ratio that the institution allows, particularly for units that are not intensive care units (ICUs). The Unit Type names above are followed by the floor/unit number in parentheses.

¹⁶⁴ See <http://qoc.upstate.edu/NurseStaffingDisplay.cfm> (accessed July 27, 2015). At times the SUNY Upstate Medical Center also has posted on its website its nurse staffing plan (targets) for each unit, which it states is “based on national best practices, the severity of the patients' illnesses, and a prediction of how many patients will be treated.” (See http://www.upstate.edu/hospital/quality_care/nursing_quality/, accessed July 27, 2015).

APPENDIX B
LIST OF JOURNAL ARTICLES AND GOVERNMENT REPORTS
(hyperlinks current as of July 1, 2015)

Abt Associates, Inc., "Appropriateness of Minimum Nurse Staffing Ratios in Nursing Homes: Phase II Final Report," Report No. 500-95-0062/TO#3 (Centers for Medicare and Medicaid Services, Dec. 2001) (available at <http://phinational.org/research-reports/report-congress-appropriateness-minimum-nurse-staffing-ratios-nursing-homes-phase-0>).

L. Aiken, *et al.*, "Hospital Staffing and Patient Mortality, Nurse Burnout, and Job Dissatisfaction," *JAMA* 288(16):1987-93 (2002) (available at <http://jama.jamanetwork.com/article.aspx?articleid=195438>).

L. Aiken, *et al.*, "Implications of the California Nurse Staffing Mandate for Other States," *Health Serv Res* 45(4):904-921 (Aug. 2010) (available at <http://www.nursing.upenn.edu/chopr/Documents/Aiken.2010.CaliforniaStaffingRatios.pdf>).

E. Anderson, *et al.*, "Linking Economics and Quality: Developing an Evidence-based Nurse Staffing Tool," *Nursing Admin Qtrly* (2011) (available at <http://www.ncbi.nlm.nih.gov/pubmed/21157264>).

Y. Antwi, "A Bargain at Twice the Price? California Hospital Prices in the New Millenium," *Forum for Health Econ & Pol* 12(1):1-21, 11 (2009) (available at <https://scholarworks.iupui.edu/bitstream/handle/1805/4125/antwi-2009-a-bargain.pdf?sequence=1>).

M. Blegan, *et al.*, "Nurse Staffing Effects on Patient Outcomes: Safety-Net and Non-Safety-Net Hospitals," *Med Care* 49(4):406-14 (2011) (available at <http://www.ncbi.nlm.nih.gov/pubmed/21407034>).

L. Bolton, *et al.*, "Mandated Nurse Staffing Ratios in California: A Comparison of Staffing and Nursing-Sensitive Outcomes Pre- and Postregulation," *Policy, Politics & Nurs Pract*, 8(4):238-250 (Nov. 2007) (available at <http://www.anacalifornia.org/archives/ratiopdf.pdf>).

California Department of Health Services, "Final Statement of Reasons" for regulations pursuant to AB 394, Aug. 25, 2003 (available at http://www.cdph.ca.gov/services/DPOPP/regs/Documents/R-37-01_FSOR.pdf).

T. Chan, *et al.*, "Effect of Mandated Nurse-Patient Ratios on Patient Wait Time and Care Time in the Emergency Department," *Academic Emerg Med* 17(5):545-552 (2010) (available at <http://onlinelibrary.wiley.com/doi/10.1111/j.1553-2712.2010.00727.x/pdf>).

S. Cho, *et al.*, "The Effects of Nurse Staffing on Adverse Events, Morbidity, Mortality, and Medical Costs," *Nurs Res* 52:71-79 (2003) (available at https://www.massnurses.org/files/file/Legislation-and-Politics/Effects_of_RN_Staffing_on_ADEs_Costs.pdf).

J. Cimiotti, *et al.*, "Nurse Staffing, Burnout, and Health Care-Associated Infection," *American J Infection Control* 40(6):486-90 (Aug. 2012) (available at <http://www.ncbi.nlm.nih.gov/pubmed/22854376>).

S. Clarke, "The Policy Implications of Staffing-Outcomes Research," *J Nurs. Adm.* 35:17-9 (2005) (available at <http://www.ncbi.nlm.nih.gov/pubmed/15647663>).

- A. Clements, "Overcrowding and Understaffing in Modern Health-Care Systems: Key Determinants in Meticillin-Resistant Staphylococcus Aureus [MRSA] Transmission," *Lancet Infect Dis* 8(7):427-34 (July 2008) (available at <http://www.ncbi.nlm.nih.gov/pubmed/18582835>).
- J. Coffman, et al., "Minimum Nurse-to-Patient Ratios in Acute Care Hospitals in California," *Health Affairs* 21(5):53-64 (2002) (available at: <http://content.healthaffairs.org/content/21/5/53.short>).
- A. Cook, et al., "The Effect of a Hospital Nurse Staffing Mandate on Patient Health Outcomes: Evidence from California's Minimum Staffing Regulation," *J Health Econ* 31(2):340-48 (Mar. 2012) (available at <http://www.ncbi.nlm.nih.gov/pubmed/22425767>).
- J. Coussement, et al., "Interventions for Preventing Falls in Acute- and Chronic-Care Hospitals: A Systematic Review and Meta-Analysis," *J Am Geriatr Soc* 56(1):29-36 (2008) (available at <http://www.ncbi.nlm.nih.gov/pubmed/18031484>).
- Andrew Dick, et al., "A Decade of Investment in Infection Prevention: A Cost-Effectiveness Analysis," *Am J of Infect Control* 43(1):4-9 (Jan. 2015) (available at <http://www.ncbi.nlm.nih.gov/pubmed/25564117>).
- N. Donaldson et al., "Final report: Impact of Unit Level Nurse Workload on Patient Safety" (Grant No. S-01-HS11954, AHRQ) (Apr. 2005) (available at <http://dne2.ucsf.edu/public/cripc/r01final.pdf>).
- N. Donaldson, et al., "Impact of California's Licensed Nurse-Patient Ratios on Unit Level Nurse Staffing and Patient Outcomes," *Policy Polit Nurs Pract*. 6(3):198-210 (2005) (available at <http://www.ncbi.nlm.nih.gov/pubmed/16443975>).
- N. Donaldson and S. Shapiro, "Impact of California Mandated Acute care Hospital Nurse Staffing Ratios: A Literature Synthesis," *Policy Politics Nurs Pract* 11:184 (2010) (available at <http://www.ncbi.nlm.nih.gov/pubmed/21233133>).
- N. Dunton, et al., "Nurse Staffing and Patient Falls on Acute Care Hospital Units," *Nurs Outlook* 52(1):53-59 (Feb. 2004) (available at <http://www.ncbi.nlm.nih.gov/pubmed/15014380>).
- W. Encinosa and F. Hellinger, "The Impact of Medical Errors on Ninety-Day Costs and Outcomes: An Examination of Surgical Patients," *Health Serv Res* 43(6):2067-2085 (Dec. 2008) (available at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2613997/>).
- K. Frith, et al., "Effects of Nurse Staffing on Hospital-Acquired Conditions and Length of Stay in Community Hospitals," *Quality management in Health Care* 19:147-55 (2010) (www.ncbi.nlm.nih.gov/pubmed/20351541).
- D. Harless and B.A. Mark, "Nurse Staffing and Quality of Care with Direct Measurement of Inpatient Staffing," *Med Care* 48:659-63 (2010) (available at <http://www.ncbi.nlm.nih.gov/pubmed/20548254>).
- Healthcare Cost and Utilization Project, HCUP Facts and Figures 2009: Statistics on Hospital-based Care in the United States (Oct. 2011), Exhibit 1.2, Inpatient Hospital Stays and Average Length of Stay (available at http://hcup-us.ahrq.gov/reports/factsandfigures/2009/exhibit1_2.jsp).
- P. Hickey, et al., "Statewide and National Impact of California's Staffing Law on Pediatric Cardiac Surgery Outcomes," *J Nurs Admin* 41(5):218-225, 223 (2011) (available at <http://www.ncbi.nlm.nih.gov/pubmed/21519208>).

- K. Hyer, *et al.*, "The Influence of Nurse Staffing Levels on Quality of care in Nursing Homes," *Gerontologist* 51(5):610-616 (Oct. 2011) (available at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3218638>).
- K. Hyer, *et al.*, "Florida's efforts to Improve Quality of Nursing Home Care Through Nurse Staffing standards, Regulation, and Medicaid Reimbursement," *J Aging Soc Policy* 21(4):318-37 (Oct.-Dec. 2009) (available at <http://www.ncbi.nlm.nih.gov/pubmed/20092125>).
- Inspector General, U.S. Dept. of Health & Human Services, *Adverse Events in Hospitals: National Incidence Among Medicare Beneficiaries*, OEI-06-09--0090 (Nov. 2010) (available at <https://oig.hhs.gov/oei/reports/oei-06-09-00090.pdf>).
- Institute of Medicine, *Keeping Patients Safe: Transforming the Work Environment of Nurses* (Washington, DC: The National Academies Press, 2004) (available at <http://www.nap.edu/catalog/10851/keeping-patients-safe-transforming-the-work-environment-of-nurses>).
- Institute of Medicine, *To Err Is Human* (1999) (available at <http://www.iom.edu/~media/Files/Report%20Files/1999/To-Err-is-Human/To%20Err%20is%20Human%201999%20report%20brief.pdf>).
- J. James, "A New, Evidence-based Estimate of Patient Harms Associated with Hospital care," *J Patient Safety* 9(3):122-128 (Sept. 2013) (available at http://journals.lww.com/journalpatientsafety/fulltext/2013/09000/a_new_evidence_based_estimate_of_patient_harms.2.aspx).
- C. Johnson, *et al.*, "Predicting Lawsuits Against Nursing Homes in the United States, 1997-2001," *Health Serv Res.* 39:1713-31 (2004) (available at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1361094/>).
- B. Kalisch, *et al.*, "Missed Nursing Care, Staffing, and Patient Falls," *J Nurs Care Quality* 27(1):6-12 (Jan/Mar 2012) (available at http://journals.lww.com/jncqjournal/Fulltext/2012/01000/Missed_Nursing_Care,_Staffing,_and_Patient_Falls.2.aspx).
- R. Kane, *et al.*, "The Association of Registered Nurse Staffing Levels and Patient Outcomes: Systemic Review and Meta-Analysis," *Med Care* 45:1195-1204, 1195 and 1197 (2007) (available at http://www.ena.org/practice-research/Documents/StaffingGuideline/Kane_2007.pdf).
- E. Lake, *et al.*, "Patient Falls: Association with Hospital Magnet Status and Nursing Unit Staffing," *Res Nurs Health* 33(5):413-25 (2010) (available at <http://www.ncbi.nlm.nih.gov/pubmed/20824686>).
- T. Lang, *et al.*, "Nurse-patient ratios: A Systematic Review on the Effects of Nurse Staffing on Patient, Nurse Employee, and Hospital Outcomes," *J Nurs Adm.* 34(7-8):326-37 (2004) (available at <http://www.ncbi.nlm.nih.gov/pubmed/15303051>).
- J. Leigh, *et al.*, "California's Nurse-to-Patient Ratio law and Occupational Injury," *Int Arch Occup Environ Health* (Sept. 3, 2014) (e-pub ahead of print, available at <http://www.ncbi.nlm.nih.gov/pubmed/25216822>).
- S. Magill, "Multistate Point-Prevalence Survey of Health Care –Associated Infections," *N Engl J Med* 370:1198-1208 (March 2014) (available at: <http://www.nejm.org/doi/full/10.1056/NEJMoa1306801#t=articleResults>).

- B. Mark, *et al.*, "California's Minimum Nurse Staffing Legislation: Results from a Natural Experiment," *Health Serv Res* 48(2 Pt 1):435-54, 447-48 (2013) (available at <http://www.ncbi.nlm.nih.gov/pubmed/22998231>).
- M. McHugh, *et al.*, "Hospitals with Higher Nurse Staffing Had Lower Odds of Readmissions Penalties Than Hospitals with Lower Staffing," *Health Aff* 21(10):1740-1747 (2013) (available by link to full text at <http://content.healthaffairs.org/content/32/10/1740.abstract>).
- M. McHugh, *et al.*, "Impact of Nurse Staffing Mandates on Safety-Net Hospitals: Lessons from California," *The Milbank Qtrly* 90(1):160-186 (Mar. 2012) (available at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3371663/>).
- National Quality Forum, *National Voluntary Consensus Standards for Nursing-Sensitive Care: An Initial Performance Measure Set* (2004) (available at http://www.qualityforum.org/Publications/2004/10/National_Voluntary_Consensus_Standards_for_Nursing-Sensitive_Care_An_Initial_Performance_Measure_Set.aspx).
- J. Needleman, *et al.*, "Nurse Staffing and Inpatient Hospital Mortality," *N Engl J Med* 364:1037-45 (2011) (available at <http://www.nejm.org/doi/full/10.1056/nejmsa1001025>).
- J. Needleman, *et al.*, "Nurse-Staffing Levels and the Quality of Care in Hospitals," *N Engl J Med* 346(22):1715-1722 (May 30, 2002) (available at <http://www.nejm.org/doi/full/10.1056/NEJMsa012247>).
- D. Oliver, *et al.*, "Risk Factors and risk Assessment Tools for Falls in Hospital I-Patients: A Systematic Review," *Age and Ageing* 33(2):122-130 (2004) (available at <http://ageing.oxfordjournals.org/content/33/2/122.long>).
- S. Person, "Nurse Staffing and Mortality for Medicare Patients with Acute Myocardial Infarction," *Med Care* 42(1):4-12 (Jan. 2004) (available at <http://www.ncbi.nlm.nih.gov/pubmed/14713734>).
- PricewaterhouseCoopers Health Research Institute, "What Works: Healing the Healthcare Staffing Shortage" (2007) (available at, <http://www.wiche.edu/info/agendaBook/nov07/presentations/Carporelli.pdf>).
- M. Rantz, *et al.*, "Nursing Home Quality, Cost, Staffing, and Staff Mix," *Gerontologist* 44(1):24-38 (2004) (available at <http://gerontologist.oxfordjournals.org/content/44/1/24.full>).
- K. Reiter, *et al.*, "Minimum Nurse Staffing legislation and the Financial Performance of California Hospitals," *Health Serv Res* 47(3 Pt 1):1030-1050 (June 2012) (<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3337946/>).
- J. Robert, "The Influence of the Composition of the Nursing Staff on Primary Bloodstream Infection Rates in a Surgical Intensive care Unit," *Infect Control and Hosp Epidemiol* (21):12-17 (2000) (available at <http://www.ncbi.nlm.nih.gov/pubmed/10656348>).
- Robert Wood Johnson Foundation, *The Revolving Door: A Report on U.S. Hospital Readmissions* (Feb. 2013) (available at <http://www.rwjf.org/content/dam/farm/reports/reports/2013/rwjf404178>)
- J. Rogowski, *et al.*, "Nurse Staffing and NICU Infection Rates," *JAMA Pediatr* 167(5):444-450 (May 2013) (available at <http://www.ncbi.nlm.nih.gov/pubmed/23549661>).

- M. Rothberg, "Improving Nurse-to-Patient Staffing Ratios as a Cost-Effective Safety Intervention," *Med Care*, 43(8):785-791 (Aug. 2005) (available at <http://www.ncbi.nlm.nih.gov/pubmed/16034292>).
- T. Shamliyan, et al., "Cost Savings Associated with Increased Staffing in Acute Care Hospitals: Simulation Exercise," *Nursing Econ* (2009) (available at www.austincc.edu/nursmods/rrc/rrc_lev4/msg_2221/documents/cost_savings_Associated_with_Increased_RN_Staffing_module_4.pdf)
- P. Shekelle, M.D., Ph.D., "Nurse-Patient Ratios as a Patient Safety Strategy: A Systemic Review," *Ann Intern Med* 158(5 Pt 2):404-09 (Mar. 5, 2013) (available at <http://www.ncbi.nlm.nih.gov/pubmed/23460097>).
- V. Staggs and J. He, "Recent Trends in Hospital Nurse Staffing in the United States," *J Nurs Admin* 43(7/8):388-393 (July/Aug. 2013) (available at <http://www.ncbi.nlm.nih.gov/pubmed/23845976>).
- V. Staggs and N. Dunton, "Associations Between Rates of Unassisted Inpatient Falls and Levels of Registered and non-Registered Nurse Staffing," *J Qual Health Care* 26(1):87-92 (Feb. 2014).
- J. Spetz, "California's Minimum Nurse-to-Patient Ratios: The First Few Months," *J of Nurs Admin* 34:571-78 (2004) (available at <http://www.ncbi.nlm.nih.gov/pubmed/20092125>).
- J. Spetz, "Nurse Satisfaction and the Implementation of Minimum Nurse Staffing Regulations," *Policy, Politics & Nurs Pract* 20(20):1-7, 4 (2008) (available via link to full text at <http://ppn.sagepub.com/content/9/1/15.abstract>).
- J. Spetz, et al., "Using Minimum Nurse Staffing Regulations to Measure the Relationship Between Nursing and Hospital Quality of Care," *Med Car Res & Rev* 70(4):380-399 (2013) (available at <http://www.ncbi.nlm.nih.gov/pubmed/23401064>).
- P. Tevington, "Professional Issues: Mandatory Nurse-Patient Ratios," *MEDSURG Nursing* 20(5): 265-68 (2011) (available at https://www.amsn.org/sites/default/files/documents/practice-resources/healthy-work-environment/resources/MSNJ_Tevington_20_05.pdf).
- L. Unruh, "Nurse Staffing and Patient, Nurse and Financial Outcomes," *The American J of Nursing* 108(1):62-71 (2008) (available at <http://www.ncbi.nlm.nih.gov/pubmed/18156863>).
- L. Unruh and M. Fottler, "Measures of Nurse Staffing: Should We Account for Patient Turnover?" *Health Serv Res* 41(2):599-612 (Apr 2016) (available at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1702519/>).
- J. Waldman, et al., "The Shocking Cost of Turnover in Health Care," *Health Care Manage Rev* 29(1):2-7, 6-7 (2004) (available at <http://www.ncbi.nlm.nih.gov/pubmed/14992479>).
- L. Weichenthal and G. Hendey, "The Effect of Mandatory Nurse Ratios on Patient Care in an Emergency Department," *J Emerg Med* 40(1):76-81 (2011) (e-published Apr. 3, 2009) (available at <http://www.ncbi.nlm.nih.gov/pubmed/19345043>).
- M. Weiss, et al., "Quality and Cost Analysis of Nurse Staffing, Discharge Preparation, and Postdischarge Utilization," *Health Serv Res*. 46(5): 1473-1494, 1483-86 (Oct. 2011) (available at <http://www.ncbi.nlm.nih.gov/pubmed/21517836>).