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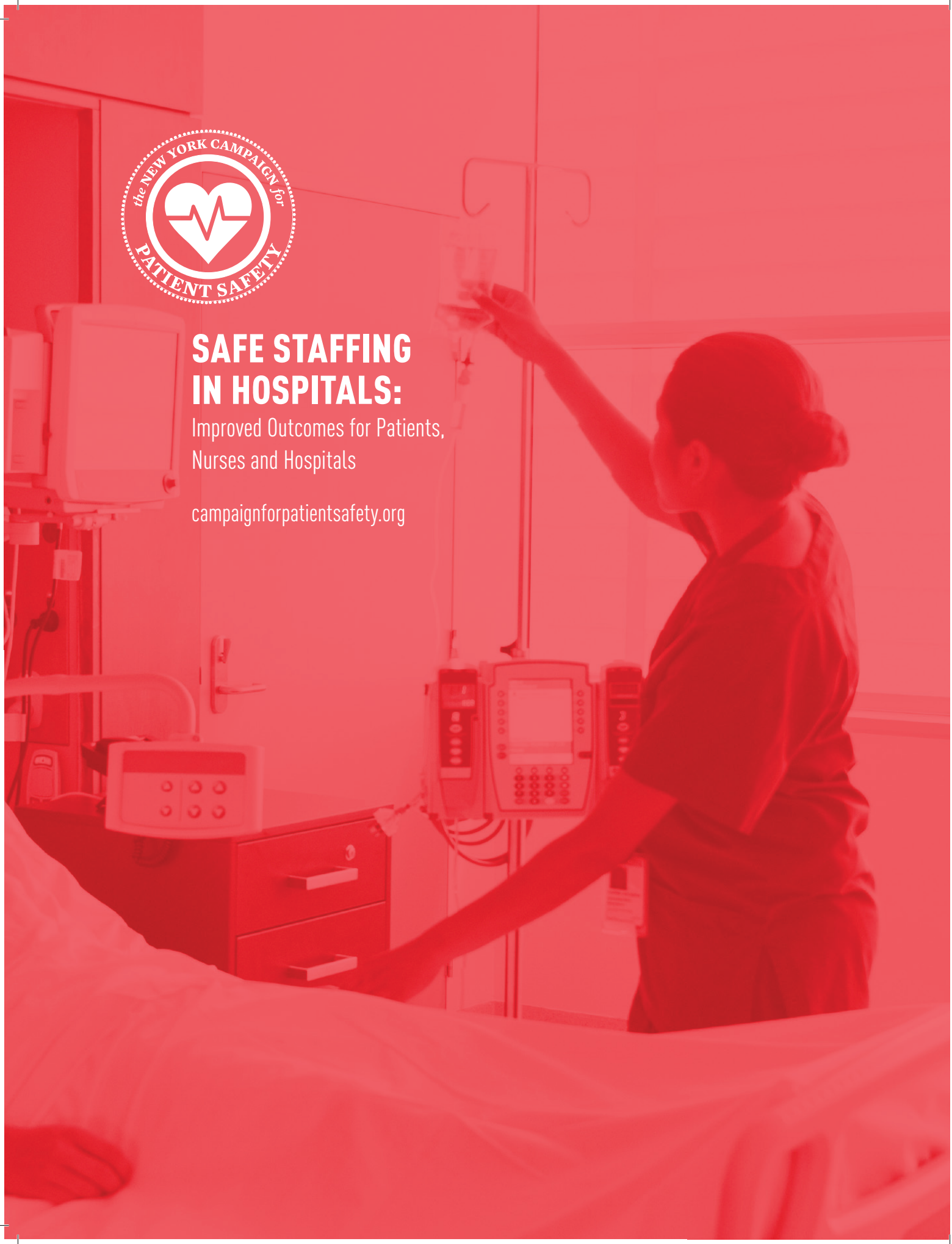
SAFE STAFFING IN HOSPITALS:

Improved Outcomes for Patients, Nurses and Hospitals

the NEW YORK CAMPAIGN for PATIENT SAFETY



SAFE STAFFING IN HOSPITALS:

Improved Outcomes for Patients, Nurses and Hospitals

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Executive Summary

Patients and their families count on our hospitals to care for their loved ones when they are sick or injured. Nurses are a vital part of safe, successful hospitals. They care for patients around the clock, providing life-saving treatment, medication and support. A safe staffing ratio of nurses to patients is critical to ensuring every patient is properly cared for.

The research is clear: Safe staffing ratios save lives and improve patient outcomes. Safe staffing ratios also reduce emergency room wait times, and lower costs for hospitals and the health system as a whole.

Conversely, research shows that short-staffing can harm patients, as nurses must leave tasks undone to take on an increased workload.

Safe staffing is more important now than ever. On average, hospital patients are sicker, increasing demands on staff and increasing workloads. Nurses report that understaffing leads to patient deaths and complications,[1] and most New Yorkers say that the state's hospitals do not have enough nurses.[2] Meanwhile, hospitals in New York State perform worse than hospitals nationally on key indicators of quality and patient safety.[3, 4]

Overwhelming evidence shows that:

- **Safe staffing saves lives.** Peer-reviewed research finds that higher nurse staffing is associated with lower mortality rates. For example, adding one RN per patient day was associated with a 16 percent decrease in failure to rescue in surgical patients.[5]

- **Safe staffing improves patient outcomes.** Studies have shown increased RN staffing lowers the risk of a number of specific patient outcomes and safety measures, including hospital-acquired infections, hospital-acquired pneumonia and cardiac arrest.[6] Higher nurse staffing also reduces hospital readmissions[7] and emergency room wait times.[8]

- **Safe staffing is cost-effective.** A 2009 analysis found that the savings associated with lives saved per thousand hospitalized patients were greater than the increased cost of one additional RN per patient day in intensive care, surgical and medical units.[9]

- **Safe staffing reduces nurse burnout, turnover and injuries.** Adding even one patient per nurse increased burnout by 23 percent and job dissatisfaction by 15 percent in one study.[10] Safe staffing ratios in California were associated with an occupational injury and illness rate 31.6 percent lower than what would have been expected without the law.[11]

California's experience has shown safe staffing laws work and that hospitals can thrive with safe staffing in place.

- Since California's law was implemented, **nurses in California care for fewer patients,** on average, than they did prior to the legislation and fewer patients than nurses in other states.[12] **Legislation also increased nurse staffing in safety-net hospitals** "in which an improvement in staffing has historically been most difficult and most improvement was needed."[13]

- **Despite predictions, no hospitals closed in California** following the implementation of minimum nurse ratios there,[14] and **hospital margins have actually improved** since implementation.[15] **Nor did hospitals decrease ancillary staffing.**[16] As reimbursements shift to a value-based model, the improved outcomes safe nurse staffing can provide will directly translate into financial benefit for hospitals.

Despite the benefits of safe staffing for patients and hospitals, patients in New York State currently have no legal protection against inadequate nurse staffing. The state legislature's previous efforts to make hospital staffing levels transparent have not succeeded, and even if information were available in a transparent fashion, many patients would not be able to choose a hospital based on adequate nurse staffing due to geographical, insurance or financial limitations.

Through the Safe Staffing and Quality Care Act, lawmakers can improve the quality of New York hospitals, keep pace with changing health care needs, and create safe and equitable standards for patients across New York State.

INTRODUCTION
A Solution to the Crisis in Patient Care

Nurses in our hospitals provide essential patient care: monitoring patients for changes in their condition, responding to requests for help, administering medications, and facilitating communication between patients and the rest of the care team. It is no surprise, then, that research shows that safe nurse staffing ratios can save lives, improve patient outcomes, reduce emergency room wait times, and reduce costs for hospitals and the overall health system. Research also shows that safe staffing is an economical way to improve patient outcomes, compared to other strategies. Conversely, short staffing is associated with nurses having to leave specific care tasks undone and worse patient outcomes.

As hospital patients are sicker, on average, and require constant monitoring by qualified, licensed professionals, staffing in hospitals is more important now than ever. Patient acuity (a measure of the intensity of care required by patients) is on the rise as lengths of stay are shortened and patients discharged more quickly to post-acute care like skilled nursing facilities and home health care. This means only the sickest patients remain in the hospital.[17] Additionally, higher patient turnover—due to shorter hospital stays—generates more work for nurses, who must help transition patients in and out of the hospital. In an intensive care unit (ICU), nurses report that the administrative work of admitting or discharging a single patient can take two hours—nearly 20 percent of a 12-hour shift.

Despite rising levels of acuity and the documented benefits of safe staffing, nurses and patients report that worsening understaffing is hurting patients. In a 2015 survey of nurses in Massachusetts, one in four nurses reported patient deaths directly attributable to having too many patients to care for at one time, and 61 percent reported complications for patients due to unsafe patient assignments.[18] Similarly, in a 2013 national survey, 66 percent of registered nurses (RNs) surveyed say limited coverage and clinical support mean nurses have to divide their time between more patients.[19]

New Yorkers agree. In a 2015 survey, 67 percent of New Yorkers said that New York hospitals do not have enough nurses, and 86 percent support a minimum number of nurses on duty per patient at any given time.[20]

New York hospitals lag in quality, patients left unprotected

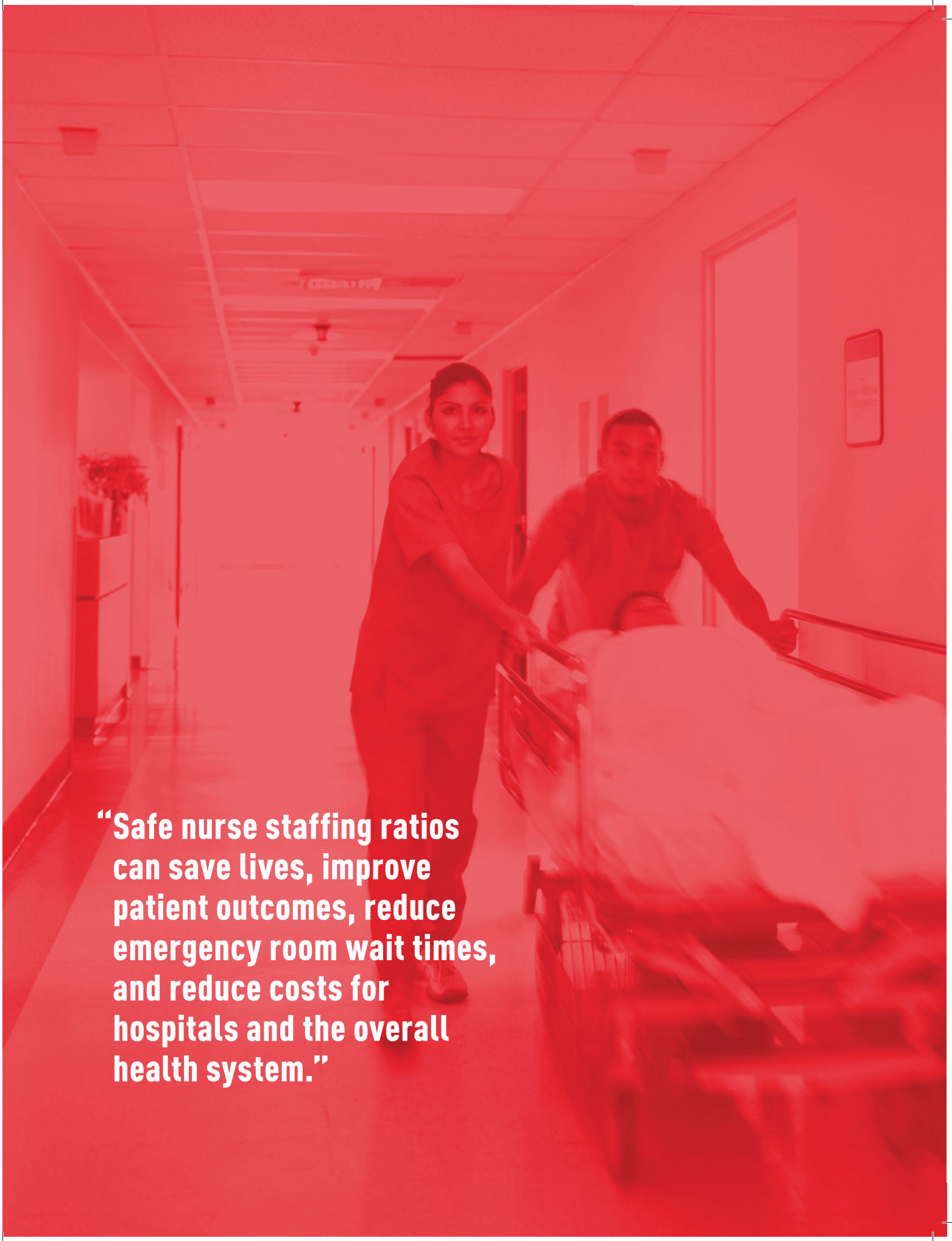
Currently, patients in New York State have no legal protection against inadequate nurse staffing. The state legislature's previous effort to at least make hospital staffing levels transparent, by requiring hospitals to provide ratio information upon request, has failed because hospitals do not provide meaningful, comprehensible data in a timely fashion. Hospitals are allowed to use self-reported data that is averaged over three to 12 months. This renders the staffing information meaningless in terms of any particular patient's experience, even though every short-staffed shift increases the likelihood of death or adverse outcomes and makes it difficult to compare across institutions.

Additionally, hospitals are not required to post the information online and have 30 days to respond to requests for staffing data, which is hardly timely for patients and their families. A 2015 study by New Yorkers for Patient and Family Empowerment found that of four hospitals from which ratio information was requested, not one provided all the information requested within 30 days.[21] Even if a patient were able to get access to accurate, comparable ratio data in a timely fashion, many patients cannot afford to choose a hospital based on its staffing, due to geography, insurance or cost.

"New York [ranks] thirty-fourth in the nation in hospital safety."

Meanwhile, New York hospitals perform worse than hospitals nationally on key indicators of quality and patient safety. The Leapfrog Group, using data from federal agencies, its own survey and the American Hospital Association, ranks New York 34th in the nation in hospital safety.[22] According to data from the Centers for Medicare and Medicaid Services (CMS), New York performs worse than every other state in the country on hospital readmissions. One in three New York hospitals measured has a rate of readmissions worse than the national average—more than any other state in both proportion of hospitals and raw numbers.[23]

The Safe Staffing and Quality Care Act (S.03330-A.01532) protects patients through minimum staffing requirements in our state's hospitals and nursing homes. Similar legislation implemented in California in 2004 has succeeded in raising RN staffing levels, maintaining ancillary staffing levels and improving patient outcomes, all while hospitals improved their operating margins. Through the proposed legislation, lawmakers can improve the quality of New York hospitals, keep pace with changing health care needs, and create safe and equitable standards for patients across New York State.



"Safe nurse staffing ratios can save lives, improve patient outcomes, reduce emergency room wait times, and reduce costs for hospitals and the overall health system."

SECTION ONE:

Safe staffing saves lives and improves patient outcomes

Peer-reviewed studies consistently report that higher RN staffing is related to lower hospital-related mortality.[24]

- **Higher RN staffing saves lives**, according to two comprehensive reviews of existing research. **Adding one full-time RN per patient day was associated with a 6 percent reduction in odds of death for medical patients and a 9 percent reduction for ICU patients**, in a 2007 analysis combining data from 28 studies.[25] A 2011 analysis of 17 studies—10 of which were not included in the 2007 study—concluded that 14 out of 17 studies found a statistically significant relationship between higher nurse staffing and lower mortality rates.[26]

- **Adding one RN is associated with a 16 percent decrease in failure to rescue in surgical patients**.[27] Failure to rescue refers to a death after a treatable complication and is an important measure of patient safety. For example, a patient may develop a bedsore that, if unnoticed or untreated, could develop into a life-threatening sepsis infection.

Increased RN staffing lowers the risk of a number of specific patient outcomes and safety measures, including hospital-acquired infections, hospital-acquired pneumonia and cardiac arrest, according to multiple studies.[28]

- **An increase of 1 percent in RN staffing reduced adverse events by 3.4 percent, and a 5 percent increase in RN staffing reduced adverse events by 15.8 percent,** according to a two-year study covering nearly 35,000 patients in 11 medical-surgical units across four hospitals.[29]

- **Higher RN staffing was associated with fewer bloodstream infections in children,** according to a study of seven children's hospitals.[30]

- **Higher nurse staffing also reduces hospital readmissions.** Increasing RN staffing by 0.75 hours per patient day was linked with a 4.4 percentage point drop in probability of readmission in a study of nearly 3,000 hospitals.[31]

- **Safe staffing standards can be particularly important as patient acuity rises.** One study noted that, as acuity rose in California, the state's safe nursing ratio law may have prevented patient outcomes from worsening.[32]

Meanwhile, lower nurse staffing is associated with higher risk of death and worse patient outcomes:

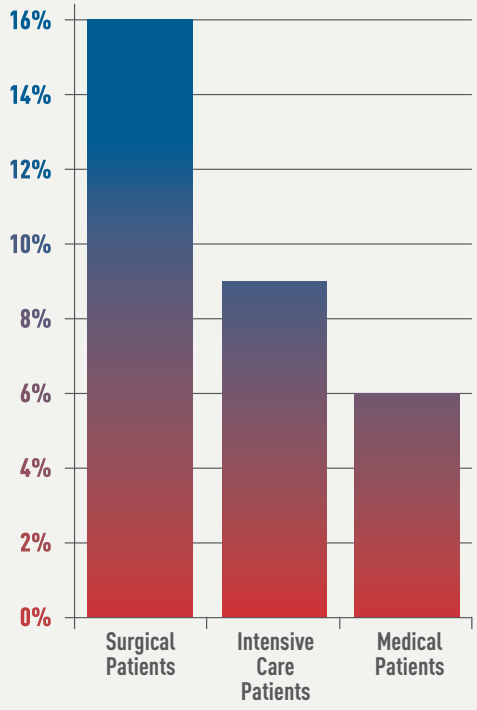
- **A patient's risk of death increased by 2 percent for every below-target, or short-staffed, shift to which he or she was exposed**, according to a four-year study of over 190,000 admissions to a hospital. The study estimated that the risk was even higher for patients exposed to short-staffing in the first five days of hospitalization.[33]

- **Adding even one patient per nurse is associated with a 7 percent increase in the likelihood of patient death within 30 days of admission and a 7 percent increase in the failure to rescue**, according to a study of 168 hospitals in Pennsylvania.[34]

- **Understaffing in neonatal intensive care units is associated with hospital-acquired infections among infants with very low birth weights**.[35]

More Nurses, More Survivors

Increased Likelihood of Patient Survival with One Additional RN per Patient Day



Patient days are the number of census days that admitted inpatients spend in the hospital. Findings of an analysis combining results from 28 studies of the impact of nurse staffing on patient outcomes. R. Kane, et al, "The Association of Registered Nurse Staffing Levels and Patient Outcomes: Systemic Review and Meta-Analysis," Med Care 2007;45:1195-1204.

Improved nurse staffing improves patient outcomes by ensuring that nurses are able to complete all necessary nursing tasks for each patient and adhere to best practices that benefit all patients. For example, lower nurse staffing hours are associated with nurses missing specific care tasks (such as providing ambulation).[36] Understaffing can also limit time for communication with patients and their families, which could result in inadequate education on post-hospital care.

Although less research is available on the impacts of Licensed Practical Nurse (LPN) and Certified Nurse Assistant (CNA) staffing in hospitals, a 2011 study found that total hours of nursing care (including care from RNs, LPNs and assistants) was associated with lower rates of congestive heart failure, mortality and failure to rescue.[37] This underlines the importance of maintaining LPN and nurse assistant staffing. After the passage of safe staffing standards in California, most nurses reported that LPN and nurse assistant staffing were maintained or increased, and this may have contributed to improved patient outcomes observed there.[38]

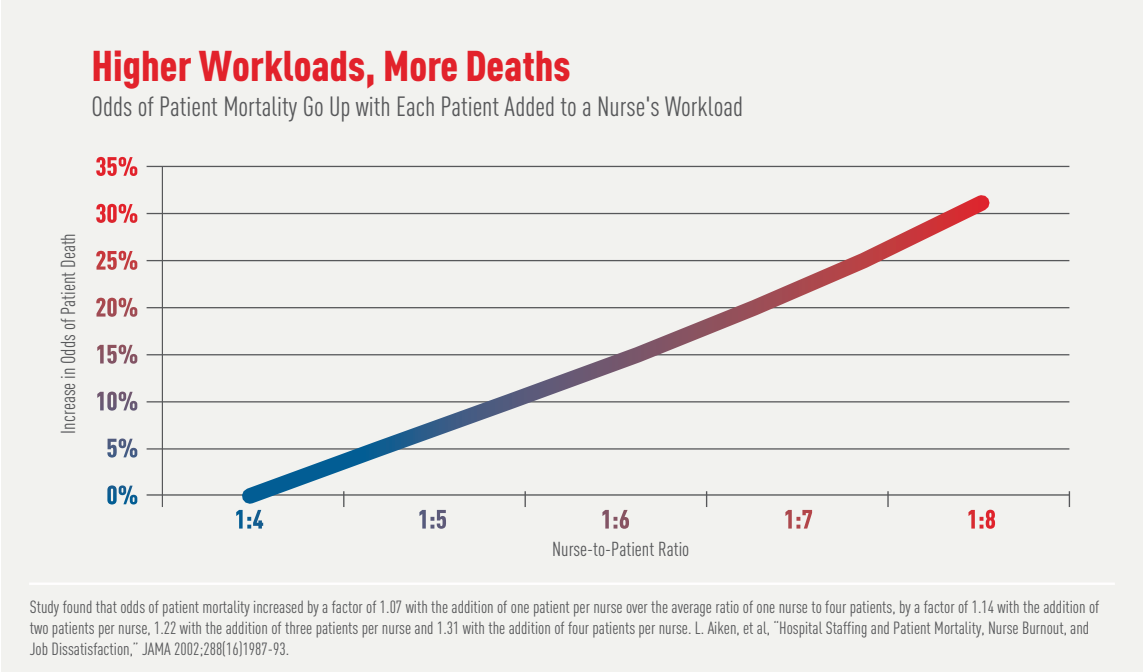
Safe staffing can improve outcomes for poor patients and patients of color

While 92 percent of New Yorkers say there should be consistent staffing levels at all New York hospitals,[39] it appears that staffing varies widely. A 2012 study of over 3,000 U.S. hospitals found that hospitals with the best staffing had more than twice the nursing staff as hospitals with the worst staffing (9.7 nurses per 1,000 patient days versus 4.6 nurses per 1,000 patient days).[40]

In general, safety-net hospitals have worse staffing levels and serve sicker, poorer patients.[41] This can contribute to health disparities. While affluent families can afford to hire private nurses to augment inadequate staffing, most patients at public hospitals cannot.

There is also evidence that inadequate staffing disproportionately affects outcomes for patients of color. Research has shown that black patients are largely concentrated in a small number of hospitals and that these hospitals have lower nurse staffing than hospitals caring for fewer black patients.[42] Additionally, a study of more than half a million patients over 65 having general, orthopedic or vascular surgery found that, controlling for location, black patients experienced higher odds of death with each additional patient per nurse compared to white patients.[43] This suggests that safe staffing standards could contribute to better outcomes for patients of color.

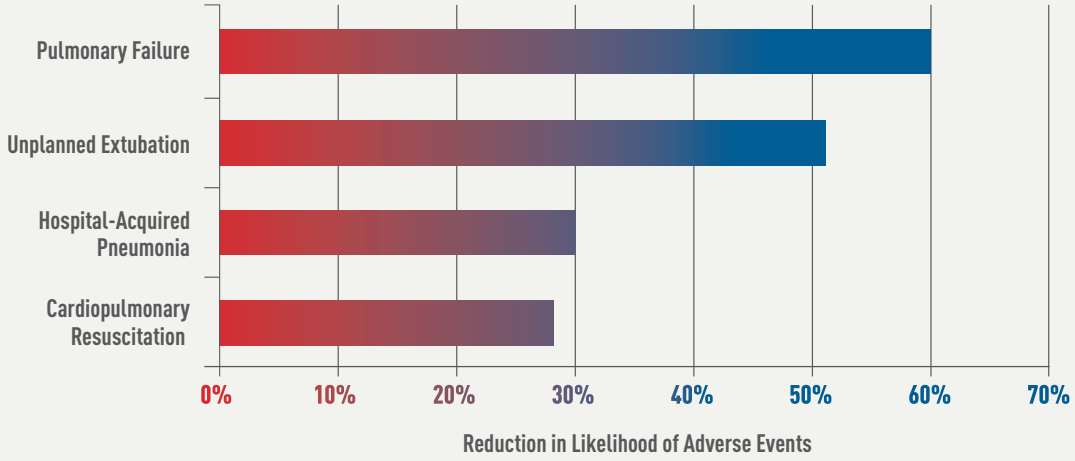
Safe staffing laws have been shown to improve staffing at safety-net hospitals. A 2012 study of the impact of California's safe staffing law found that the legislation increased nurse staffing "in those hospitals in which an improvement in staffing has historically been most difficult and most improvement was needed."[44]



Study found that odds of patient mortality increased by a factor of 1.07 with the addition of one patient per nurse over the average ratio of one nurse to four patients, by a factor of 1.14 with the addition of two patients per nurse, 1.22 with the addition of three patients per nurse and 1.31 with the addition of four patients per nurse. L. Aiken, et al, "Hospital Staffing and Patient Mortality, Nurse Burnout, and Job Dissatisfaction," JAMA 2002;288(16)1987-93.

In the ICU: More Nurses, Safer Patients

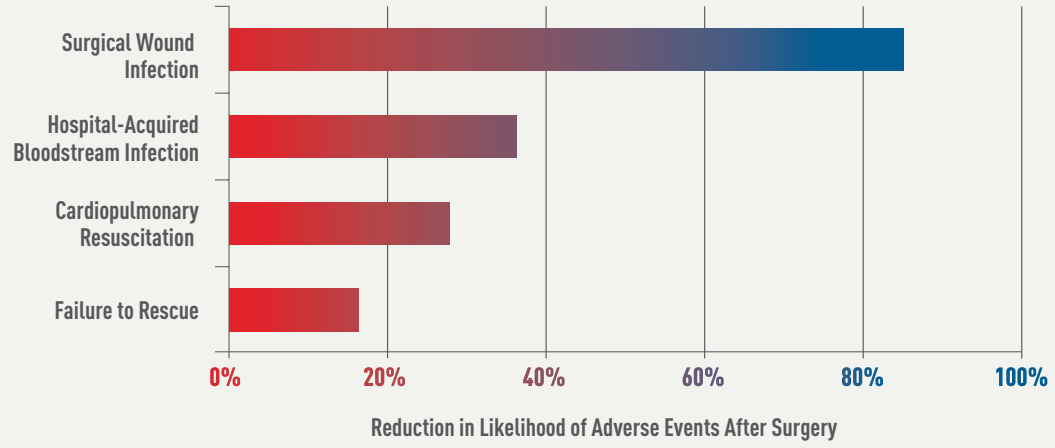
Decreased Likelihood of Adverse Events for ICU Patients with One Additional RN per Patient Day



Patient days are the number of census days that admitted inpatients spend in the hospital. Findings of an analysis combining results from 28 studies of the impact of nurse staffing on patient outcomes. R. Kane, et al, "The Association of Registered Nurse Staffing Levels and Patient Outcomes: Systemic Review and Meta-Analysis," Med Care 2007;45:1195-1204.

After Surgery: More Nurses, Safer Patients

Decreased Likelihood of Adverse Events for Surgical Patients with One Additional RN per Patient Day



Patient days are the number of census days that admitted inpatients spend in the hospital. Findings of an analysis combining results from 28 studies of the impact of nurse staffing on patient outcomes. R. Kane, et al, "The Association of Registered Nurse Staffing Levels and Patient Outcomes: Systemic Review and Meta-Analysis," Med Care 2007;45:1195-1204.

SECTION TWO:

Safe staffing ratios will save money as well as lives

New York's hospitals need to improve care to reduce readmissions and improve outcomes for patients, and research shows that safe staffing is an economical way to make those improvements. There is significant evidence that improved nurse staffing can save money for hospitals, and the health system overall, by improving patient outcomes, especially those that are increasingly tied to hospital reimbursements, and reducing costly nurse turnover and injuries.

Safe staffing is a cost-effective way to improve patient outcomes

- **Increases in hospital nurse staffing levels improved quality and reduced length of stay at no additional cost** in one four-year study. Researchers also found that increasing the number of registered nurses reduced costs.[45]

- **The money saved when patient lives are saved outpaces the cost of increased staffing.** A 2009 study found that the value of lives saved per 1,000 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.[46]

- In another study, decreasing the number of patients per nurse from seven to six cost $63,900 per life saved—while other measures cost far more. By way of comparison, it noted that thrombolytic therapy (the breakdown of blood clots by pharmacological means) in a case of acute myocardial infarction (heart attack) costs $182,000 per life.[47]

Safe staffing is common sense in light of new reimbursement rules

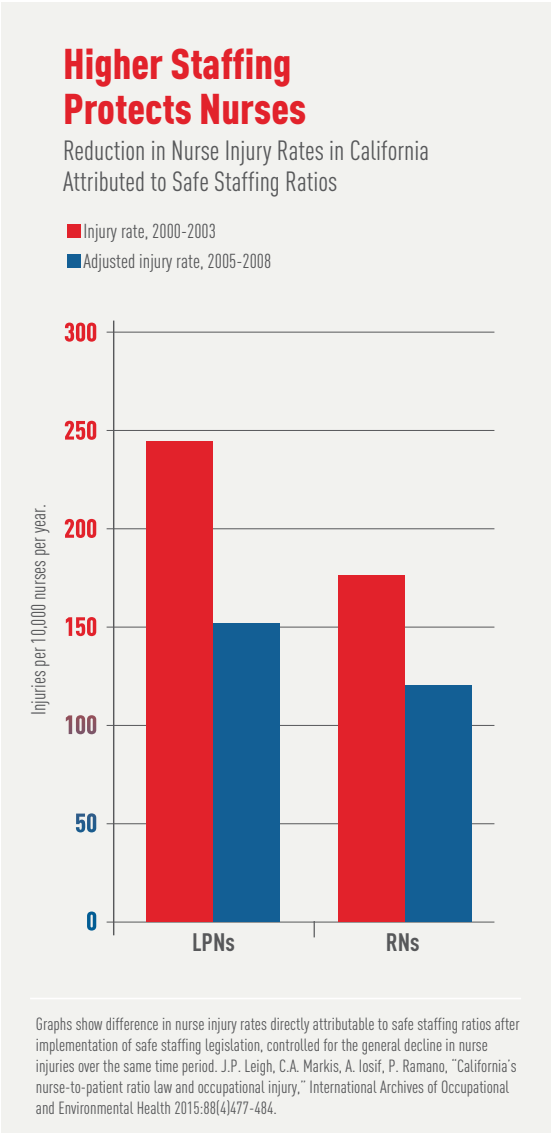
Improved nurse staffing makes even greater economic sense in the context of changing Medicare reimbursement processes under the Affordable Care Act (ACA). Medicare's Value-Based Purchasing programs reward hospitals that provide quality care by tying reimbursements to rates of hospital readmissions, hospital-acquired infections and patient outcomes.[48]

As noted above, the quality measures Medicare considers in its reimbursements are improved by safe nurse staffing. A 2013 study found that under the Affordable Care Act's Hospital Readmissions Reduction Program (HRRP), hospitals with higher nurse staffing had 25 percent lower odds of being penalized for excessive readmissions compared to otherwise similar hospitals with lower staffing.[49] Researchers noted that investment in nursing is a potential system-level intervention to reduce readmissions that policymakers and hospital administrators should consider in the new regulatory environment.

New York hospitals are already being penalized for high rates of potentially avoidable infections and complications such as blood clots, bedsores and falls. In December 2015, Medicare announced it would lower 2016 payments by 1 percent for 46 New York hospitals—approximately one out of four hospitals in the state. More than half of these facilities were also penalized in 2015.[50]

Nurse turnover and burnout are costly

The high cost of nurse turnover is well documented, with studies putting the cost of turnover between $22,000 and over $64,000 per nurse.[51] PricewaterhouseCoopers estimated in



Graphs show difference in nurse injury rates directly attributable to safe staffing ratios after implementation of safe staffing legislation, controlled for the general decline in nurse injuries over the same time period. J.P. Leigh, C.A. Markis, A. Iosif, P. Ramano, "California's nurse-to-patient ratio law and occupational injury," International Archives of Occupational and Environmental Health 2015:88(4)477-484.

2007 that hospitals with low nurse retention rates spend, on average, $3.6 million more per year than hospitals with high retention rates, and that every percent increase in nurse turnover costs an average hospital about $300,000 annually.[52]

Despite this, nurse turnover is on the rise. In a 2014 survey of 141 facilities, covering nearly half a million health care workers and over 100,000 RNs, facilities reported a turnover rate for bedside RNs of 16.4 percent—up from 11.2 percent in 2011. Even higher rates of turnover are seen in behavioral health (49.2 percent), emergency services (21.7 percent), medical/surgical (20.7 percent), and step down (18.5 percent). Researchers report that without intervention, these areas will turn over their RN staff every two to 5.4 years.[53]

Turnover is largely driven by burnout and workload, suggesting that improved safe staffing will keep experienced nurses on the job. Burnout is the frustration, loss of interest, decreased productivity, and fatigue caused by overwork and prolonged stress. A study in Pennsylvania found that an increase of one patient per nurse increased burnout by 23 percent and job dissatisfaction by 15 percent. In turn, 43 percent of nurses who reported high burnout and were dissatisfied with their job intended to leave in the next year, while only 11 percent of those who were not dissatisfied intended to leave.[54]

"The money saved when patient lives are saved outpaces the cost of increased staffing."

Safe staffing can also reduce injuries that cause nurses to be away from work. The Occupational Safety and Health Administration reports that RNs and nurse aides suffer more injuries than almost any other occupation nationwide, and more injuries that keep them away from work.[55] A 2014 study of the impact of California's 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 percent lower than the number of injuries otherwise expected based on a comparison with national averages.[56]

The Government Accountability Office has found that job dissatisfaction, driven by inadequate staffing, heavy workloads, and increased use of overtime, is a major obstacle to increasing the supply of nurses into the workforce.[57] Safe staffing standards can improve these conditions and bring nurses back to the bedside.

CASE STUDY:
California Hospitals Thrived Under Safe Staffing Legislation

In 2004, California became the first state to implement statewide minimum nurse-to-patient staffing requirements. Prior to the adoption of these standards, there was considerable concern that safe staffing legislation would cause hospitals to close, hurt hospitals' bottom line, gut support staff and not improve patient outcomes.[58]

Those concerns are being echoed by New York hospital management in their lobbying campaign to kill safe staffing legislation in Albany. **But these fears have been shown to be unfounded—research in California has demonstrated that patients have benefited and hospitals have thrived since safe staffing legislation was enacted.**

Nurses in California now care for fewer patients, on average, than they did prior to the legislation—and fewer patients than nurses in other states. The greatest improvements were found in hospitals with the lowest and the highest pre-mandate staffing ratios.[59]

The lower ratios required by the California staffing law resulted in improved patient outcomes—despite increasing acuity.[60]

- **Failure-to-rescue rates improved significantly more** in California hospitals than in comparable hospitals in other states. Hospitals that were the most understaffed prior to regulatory implementation saw a significant decrease in pulmonary embolism/deep vein thrombosis.[61]

- **Emergency room wait times fell** after the new requirements went into effect,[62] and fewer patients left emergency departments without being seen, according to other studies.[63]

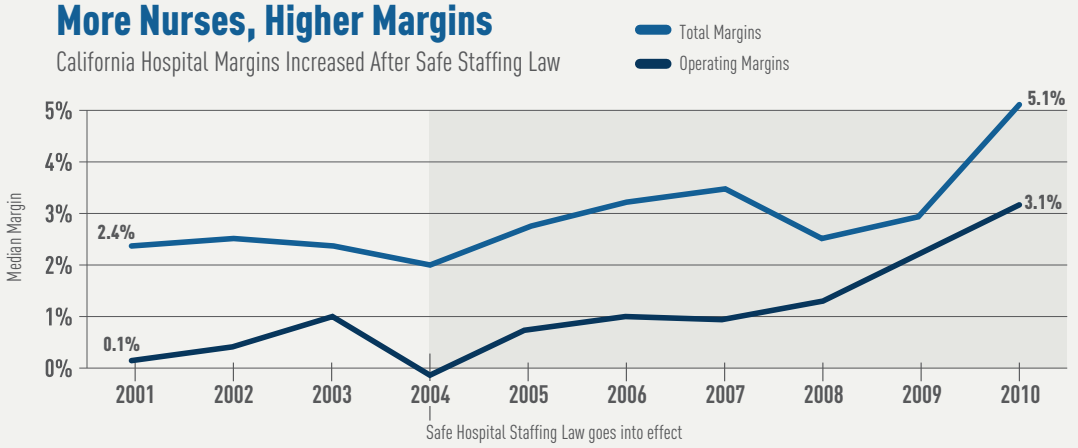
Critically important to the New York debate over staffing legislation, the implementation of the California law did not negatively affect hospital financial performance.

- **No hospitals have closed in California** due to the implementation of its safe staffing law.[64]

- **Staffing requirements had at most a marginal impact on hospital financial stability,** according to a California Healthcare Foundation study five years after the ratios were implemented.[65] The median operating margin for California hospitals tripled from 1 percent in 2003, the year before the ratios went into effect, to 3.1 percent in 2010.[66]

More Nurses, Higher Margins

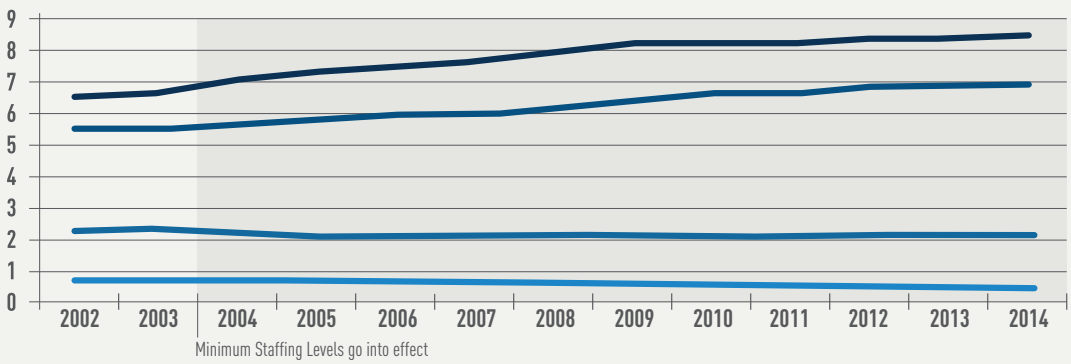
California Hospital Margins Increased After Safe Staffing Law



The operating margin is the percentage of operating revenue that remains as income after operating expenses have been deducted. The total margin is the percentage of all revenue that remains as income after all expenses have been deducted. Source: California Healthcare Foundation, "California Hospitals: Buildings, Beds, and Business," January 2013. Based on OSHPD Hospital Annual Financial Data, 2001-2010.

In California: Support Staffing Stays Strong

Changes in Productive Hours per Patient Day



Productive hours are total hours actually worked. Adjusted days are patient days adjusted for outpatient utilization. Source: California Office of Statewide Health Planning and Development, Hospital Annual Financial Data Pivot Profiles, 2002-2014. Productive hours per adjusted days.

- **Increasing RN staffing does not have a significant impact on hospital profits,** according to academic research.[67]

Nor was ancillary staffing reduced as a result of improved nurse staffing.

- **Employment of licensed vocation nurses (LVNs) and aides has remained stable under the new law.**[68]
- There was **little change overall in LVN, nurse aide or clerical staffing** between 2000 and 2006, after the California law was implemented, according to a 2012 study. Data on staffing levels through 2014 demonstrates that LVN and nurse aide staffing levels have continued to be relatively steady in California hospitals.[69]
- The same study documented an **increase in diagnostic radiology and respiratory therapy staffing.**[70]
- In a survey, **73 percent of nurses reported that levels of support staff either stayed the same or increased after the law** was implemented.
- Additionally, **66 percent of respondents reported that the levels of unlicensed assistive personnel, such as nursing assistants, increased or stayed the same.**[70]

CONCLUSION:
Safe staffing benefits patients, nurses and hospitals

Hospitals and patients face significant challenges, nationally and in New York State. Patients are sicker, nurses report "burnout" and are more likely to leave the profession, and hospital finances are increasingly tied to patient outcomes. New York hospitals are ranked below the national average in key measures of quality patient safety, and most New Yorkers say that hospitals do not have enough nurses.

Safe staffing will address these challenges. Overwhelming evidence shows that higher nurse staffing saves lives, improves patient outcomes and reduces hospital readmissions. The California experience shows legislation establishing safe staffing ratios is an effective way to improve staffing, even in those hospitals that traditionally have the worst staffing and treat the poorest, sickest patients, making safe staffing a matter of health care equity. Nor did the California law reduce essential ancillary staffing.

"Hospitals can thrive by improving staffing."

Hospitals can thrive by improving staffing. There is also ample evidence that the savings associated with saved patient lives and improved outcomes from additional nurse staffing significantly outpace the costs of that staffing. As reimbursements shift to a value-based model, the improved outcomes resulting from safe nurse staffing will directly translate into financial benefit for hospitals. Even before the widespread introduction of outcome-based reimbursements, the California example showed hospitals succeeding with safe staffing. No hospitals closed in California following the implementation of minimum nurse ratios there, and hospital margins have actually improved since the years prior to implementation.

New Yorkers deserve the protection of minimum staffing standards in our hospitals, for ourselves and our loved ones.

ENDNOTES

1 Survey of Massachusetts registered nurses, conducted by Anderson Robbins Research on behalf of the Massachusetts Nurses Association in April 2015. Most respondents (61 percent) had no affiliation with the MNA. Available at http://www.massnurses.org/news-and-events/p/openItem/9463.

2 Survey of New York State voters, conducted by The Mellman Group on behalf of the Communications Workers of America in November 2015.

3 The Leapfrog Group, "Hospital Safety Score," available at http://www.hospitalsafetyscore.org/your-hospitals-safety-score/state-rankings. For information on methodology, see http://www.hospitalsafetyscore.org/your-hospitals-safety-score/about-the-score.

4 Centers for Medicare and Medicaid Services, "Readmissions and Deaths- State," available at https://data.medicare.gov/Hospital-Compare/Readmissions-and-Deaths-State/bs2r-24vh.

5 R. Kane, et al, "The Association of Registered Nurse Staffing Levels and Patient Outcomes: Systemic Review and Meta-Analysis," *Med Care* 2007;45:1195-1204.

6 Kane, et al, supra n5 and J. Needleman, et al, "Nurse Staffing and Inpatient Hospital Mortality," *N Engl J Med* 2011;364:1037-45.

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

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9 T. Shamliyan, et al, "Cost Savings Associated with Increased Staffing in Acute Care Hospitals: Simulation Exercise," *Nursing Econ* 2009 Sep-Oct;27(5):302-14, 331.

10 L. Aiken, et al, "Hospital Staffing and Patient Mortality, Nurse Burnout, and Job Dissatisfaction," *JAMA* 2002;288(16)1987-93.

11 J.P. Leigh, C.A. Markis, A. Iosif, P. Ramano, "California's nurse-to-patient ratio law and occupational injury," *International Archives of Occupational and Environmental Health* 2015:88(4)477-484. Available at http://link.springer.com/article/10.1007/s00420-014-0977-y.

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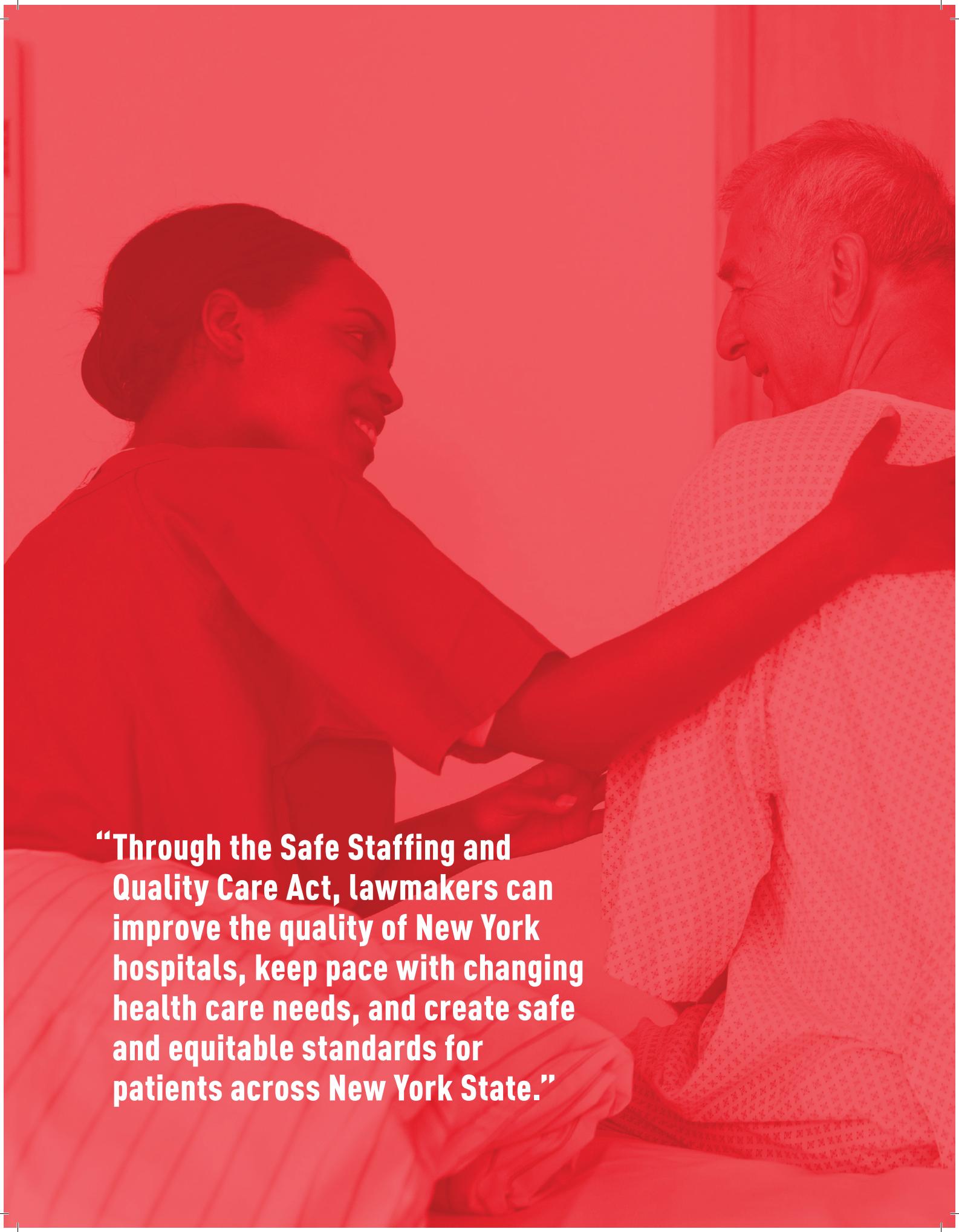

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