

Improving Nurse-Patient Staffing:
Economic and Financial Implications

Statement

By

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Before the Health Care Financing Committee
Gardner Auditorium, State House
Boston, MA

March 24, 2014

The Patient Safety Act (House Bill 3843) is designed to set a safe limit on the number of patients a registered nurse must care for at one time. It will improve nurse-patient staffing levels and thus enhance the safety and quality of patient care in Massachusetts hospitals. Generally, hospitals with low nurse staffing levels have higher rates of adverse patient and nurse outcomes. These adverse outcomes are intricately related to and associated with both poorer quality of patient care and higher treatment costs.

Nurse patient assignment levels and the impact on patient outcomes have been studied for at least two decades. Regardless of the measures used to reflect the level of nursing care (e.g. nurse-patient load, total nursing hours or proportion of direct patient care provided by nurses), a significant inverse relationship between nurse patient assignment and adverse patient outcomes has been consistently demonstrated. Patient outcomes have been variously measured using critically important indicators such as hospital mortality, failure to rescue (FTR), length of stay, patient satisfaction and clinical conditions including pneumonia, cardiac arrest, electrolyte imbalances, pressure ulcers, skin trauma and urinary tract infections.¹²³⁴⁵⁶⁷⁸⁹¹⁰¹¹ In most studies, lower nurse staffing levels resulted, as expected, in higher rates of mortality, longer lengths of stay, less patient satisfaction and more adverse clinical outcomes. Just as importantly, studies have also consistently demonstrated that inadequate nurse staffing levels lead to higher rates of job dissatisfaction, adverse physical and mental health outcomes, nurse burnout, lower retention rates and higher turnover.¹²¹³¹⁴ This wide range of negative outcomes for both patients and nurses has economic and financial implications for payers and providers.

Economic value of increased nurse staffing levels

A recent study by Dall and colleagues examined the economic implications of changes in staffing and found that, estimating conservatively, each additional registered nurse assigned to patient care generated nearly \$58,000 (\$57,700 in 2005 dollars) in reduced medical costs and improved national productivity or about \$69,000 in 2014 dollars.¹⁵¹⁶ These savings were generated primarily by reduced nosocomial complications, length of stay and mortality. This study did not include any savings that would accrue from reducing nurse burnout or turnover rates that have also been linked to higher nurse staffing levels and improved patient outcomes.¹⁷¹⁸¹⁹ For example, one study estimated that the turnover cost per registered nurse averaged \$85,000 (in 2007 dollars) or approximately \$96,000 in 2014 dollars.²⁰

How does RN assignment levels affect a hospital's bottom line? One study of 422 hospitals by McCue and colleagues found that when registered nursing levels rose, there was an increase in operating costs to hospitals but no decrease in profits.²¹ In another study simulating alternative staffing levels among 799 hospitals, Needleman and colleagues report overall little to no increase in hospital costs. In fact, the highest increase of 1.5% in costs would be more than offset by a reduction in length of stay, adverse clinical outcomes and patient deaths.²²²³

Legislation enacted in California led to an increase in RN staffing levels.²⁴ A study by Aiken and colleagues found that, compared to two other states, increasing nurse staffing levels in California was associated with significantly lower mortality, nurse burnout and

higher job satisfaction.²⁵ According to Medicare cost reports, there is no evidence that hospital profitability suffers as a result of RN patient load limits (See Figure 1).

Financial Penalties & Quality of Care

The Affordable Care Act has introduced at least two measures to improve the quality of hospital care that may be directly linked to nurse/patient staffing levels: value based purchasing and readmission rates. The Value Based Purchasing Program rewards hospitals with bonuses or penalizes them based on how they perform on 24 quality measures, which includes patient satisfaction surveys and for the first time this year, death rates.

The Hospital Readmissions Reduction Program penalizes hospitals for excessive readmission rates. A recent study that examined 2013 penalty data for 2,826 adult acute care hospitals found that hospitals with higher nurse staffing levels had 25% lower odds of Medicare readmission penalties than a sample of lower-staffed hospitals.^{26,27} Other studies have had similar findings, linking increased nurse/patient staffing levels with reduced readmission rates.²⁸

A total of 85% of Massachusetts hospitals are currently being penalized by CMS for excessive rates of Medicare readmissions,²⁹ and 37% are being assessed for value or quality of care related penalties.³⁰ [see Tables 1 and 2] The most recent value-based and readmission penalties levied by CMS on Massachusetts hospitals are described in Table 3. By way of illustration--let us examine timely emergency department care. On five out of

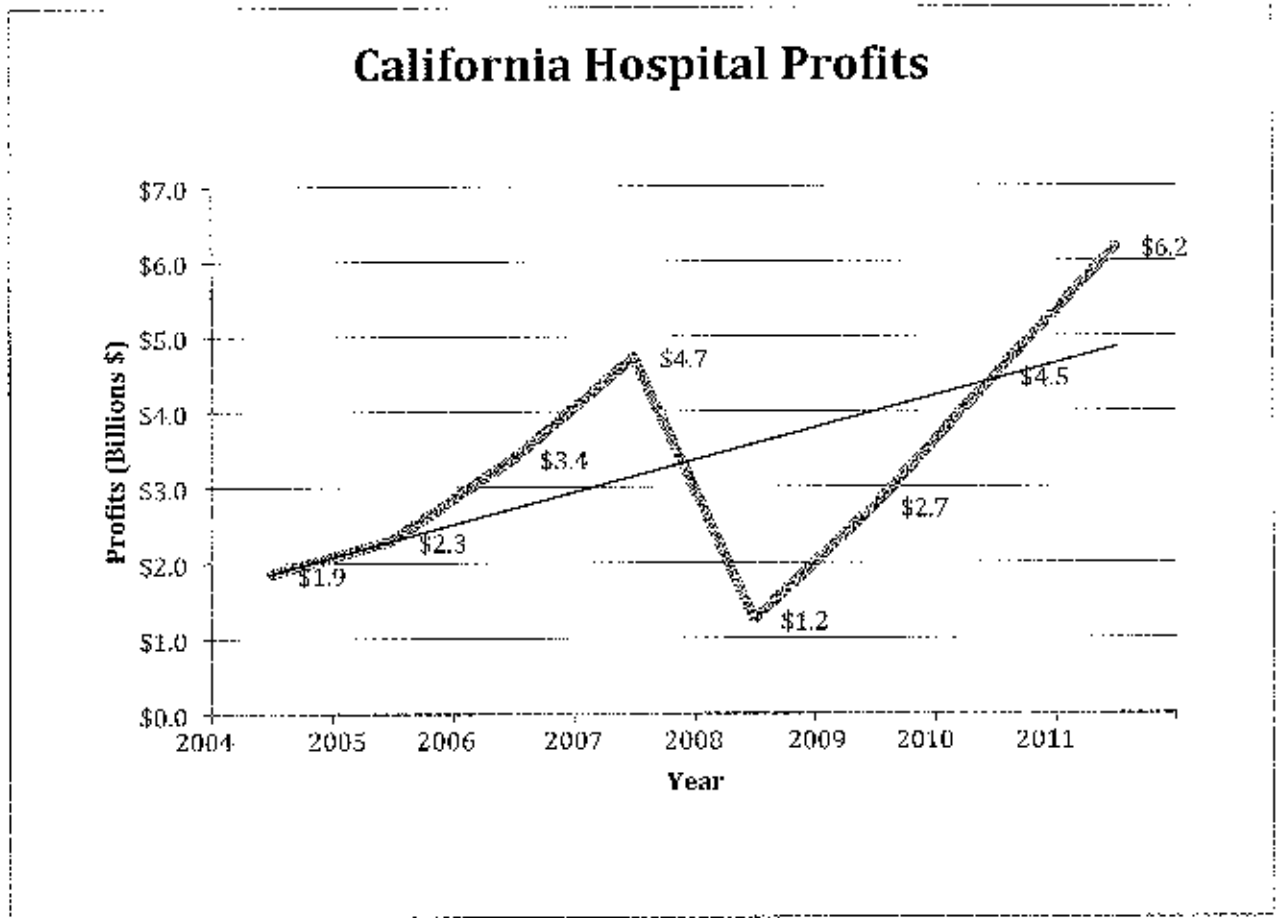
six measures, Massachusetts hospitals lag behind national averages, which clearly can adversely affect patient outcomes and could be improved by higher nurse staffing levels in the ER.

Conclusion

The overwhelming weight of the evidence strongly suggests that improving nurse staffing levels is a key factor in promoting high quality patient care and safety. To put it simply, without requiring safe patient limits, hospitals endanger their patients by putting too large of a workload on too few nurses. Moreover, improving patient outcomes is generally associated with reduced economic costs for patients, providers and payers. The health care system is rapidly evolving towards a more value-based system in which providers will increasingly be rewarded for improvements in quality. Raising inpatient nurse staffing levels, which have been demonstrated to improve quality of care, is a moral, political and economic imperative whose time has come.

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Figure 1



Source: Medicare Cost Reports

Table 1

Hospital Readmission Penalties, October 1, 2013–September 30, 2014

| | No Penalties (No. of hospitals) | | Penalty (No. of Hospitals) | Total No. Hospitals | % Hospitals Penalized | Average Penalty |
|---------------|---------------------------------|----------------------------|----------------------------|---------------------|-----------------------|-----------------|
| | No Penalties (No. of hospitals) | Penalty (No. of Hospitals) | | | | |
| Massachusetts | 9 | 52 | 61 | | 85% | 0.47% |
| US TOTAL | 1154 | 2225 | 3379 | | 66% | 0.38% |

Source: <http://bit.ly/1Hy5hu>

Table 2

Hospital Value-Based Purchasing Bonus/Penalty 2014

| | % Hospitals Receiving Bonus | % Hospitals Receiving Penalty | Total No. Hospitals | No. Hospitals Receiving Bonus | No. Hospitals Neither Bonus Nor Penalty | No. Hospitals Receiving Penalty | Average Bonus | Average Penalty | Avg. of Net Bonus and Penalties |
|---------------|-----------------------------|-------------------------------|---------------------|-------------------------------|---|---------------------------------|---------------|-----------------|---------------------------------|
| | | | | | | | | | |
| Massachusetts | 60% | 37% | 57 | 34 | 2 | 21 | 0.26% | -0.25% | 0.06% |
| US TOTAL | 45% | 53% | 2728 | 1231 | 46 | 1451 | 0.24% | -0.26% | -0.03% |

Source: <http://bit.ly/1qMryGw>

Table 3

Value Based Purchasing Bonus/Penalty & Readmission Penalty, Massachusetts Hospitals

| Hospital Name | City | State | Value Based Purchasing Bonus/Penalty | | Readmissions Penalty | | Total VBP & Readmission Bonus/Penalty | |
|----------------------------------|-------------|-------|--------------------------------------|--------------|-----------------------------|---------------|---|---------------|
| | | | Released in Nov. 2012-13 | 2013-14 | Released in Aug. 2012-13 | 2013-14 | Net change to hospital payments due to both programs 2012-13 | 2013-14 |
| Massachusetts Average | | | 0.01% | 0.06% | -0.44% | -0.41% | -0.43% | -0.35% |
| Anna Jaques Hospital | Newburyport | MA | 0.32% | -0.04% | -0.26% | -0.34% | 0.06% | -0.38% |
| Baystate Franklin Medical Center | Greenfield | MA | -0.20% | -0.44% | -0.05% | -0.14% | -0.25% | -0.58% |
| Baystate Mary Lane Hospital | Ware | MA | -0.20% | -0.44% | 0.00% | 0.00% | -0.20% | -0.44% |
| Baystate Medical Center | Springfield | MA | 0.14% | 0.24% | 0.00% | 0.00% | 0.14% | 0.24% |
| Berkshire Medical Center Inc | Pittsfield | MA | 0.46% | 0.59% | -0.05% | -0.04% | 0.41% | 0.55% |

| | | | | | | | | |
|---|-------------|----|--------|--------|--------|--------|--------|--------|
| Beth Israel Deaconess Hospital - Needham | Needham | MA | -0.16% | -0.22% | -0.84% | -0.05% | -1.00% | -0.27% |
| Beth Israel Deaconess Hospital-Milton Inc | Milton | MA | 0.26% | 0.34% | -0.23% | -0.69% | 0.03% | -0.35% |
| Beverly Hospital Corporation | Beverly | MA | 0.05% | 0.06% | -0.17% | -0.09% | -0.12% | -0.03% |
| Boston Medical Center Corporation | Boston | MA | -0.12% | 0.08% | -1.00% | -0.79% | -1.12% | -0.71% |
| Brigham And Women's Faulkner Hospital | Boston | MA | 0.45% | 0.75% | -0.81% | -0.85% | -0.36% | -0.10% |
| Brigham And Women's Hospital | Boston | MA | 0.03% | 0.48% | -0.55% | -0.30% | -0.52% | 0.18% |
| Cambridge Health Alliance | Cambridge | MA | -0.39% | -0.52% | -0.94% | -0.32% | -1.33% | -0.84% |
| Cape Cod Hospital | Hyannis | MA | 0.03% | 0.19% | -0.17% | -0.24% | -0.14% | -0.05% |
| Carney Hospital | Boston | MA | -0.03% | -0.35% | -0.11% | -0.46% | -0.14% | -0.81% |
| Clinton Hospital Association | Clinton | MA | [1] | [1] | -0.58% | -0.48% | -0.58% | -0.48% |
| Cooley Dickinson Hospital Inc, The | Northampton | MA | 0.26% | 0.05% | -0.19% | -0.12% | 0.07% | -0.07% |
| Emerson Hospital | W Concord | MA | -0.60% | -0.27% | 0.00% | 0.00% | -0.60% | -0.27% |
| Falmouth Hospital | Falmouth | MA | 0.21% | 0.65% | 0.00% | -0.06% | 0.21% | 0.59% |
| Good Samaritan Medical Center | Brockton | MA | -0.28% | -0.43% | -0.94% | -0.73% | -1.22% | -1.16% |
| Hallmark Health System | Melrose | MA | -0.18% | 0.20% | -0.06% | -0.24% | -0.24% | -0.04% |
| Harrington Memorial Hospital | Southbridge | MA | 0.04% | 0.07% | -0.65% | -0.64% | -0.61% | -0.57% |
| Healthalliance Hospitals, Inc | Leominster | MA | -0.54% | -0.30% | -0.22% | -0.43% | -0.76% | -0.73% |
| Heywood Hospital | Gardner | MA | -0.28% | -0.05% | -0.76% | -0.52% | -1.04% | -0.57% |

| | | | | | | | | |
|-------------------------------------|-------------|----|--------|--------|--------|--------|--------|--------|
| Holy Family Hospital | Methuen | MA | 0.00% | -0.06% | -0.85% | -0.69% | -0.85% | -0.75% |
| Holyoke Medical Center | Holyoke | MA | 0.06% | -0.14% | -0.20% | -0.63% | -0.14% | -0.77% |
| Jordan Hospital Inc | Plymouth | MA | 0.05% | -0.09% | -1.00% | -1.06% | -0.95% | -1.15% |
| Lahey Clinic Hospital | Burlington | MA | 0.20% | 0.31% | -0.88% | -0.54% | -0.68% | -0.23% |
| Lawrence General Hospital | Lawrence | MA | -0.31% | -0.16% | -0.24% | -0.36% | -0.55% | -0.52% |
| Lowell General Hospital | Lowell | MA | -0.11% | 0.05% | -0.19% | -0.26% | -0.30% | -0.21% |
| Marlborough Hospital | Marlborough | MA | -0.06% | -0.02% | -0.94% | -0.86% | -1.00% | -0.88% |
| Massachusetts Eye And Ear Infirmary | Boston | MA | [1] | [1] | 0.00% | 0.00% | 0.00% | 0.00% |
| Massachusetts General Hospital | Boston | MA | -0.25% | 0.24% | -0.51% | -0.25% | -0.76% | -0.01% |
| Mercy Medical Center | Springfield | MA | [1] | -0.04% | -0.02% | 0.00% | -0.02% | -0.04% |
| Merrimack Valley Hospital | Haverhill | MA | -0.05% | 0.00% | -0.13% | 0.00% | -0.18% | 0.00% |
| Metrowest Medical Center | Frammingham | MA | -0.06% | 0.26% | -1.00% | -0.95% | -1.06% | -0.69% |
| Milford Regional Medical Center | Milford | MA | 0.02% | 0.15% | -0.42% | -0.88% | -0.40% | -0.73% |
| Morton Hospital | Taunton | MA | -0.08% | -0.69% | -0.66% | -0.95% | -0.74% | -1.64% |
| Mount Auburn Hospital | Cambridge | MA | 0.20% | 0.62% | -0.60% | -0.16% | -0.40% | 0.46% |
| Nantucket Cottage Hospital | Nantucket | MA | [1] | [1] | -0.45% | -0.15% | -0.45% | -0.15% |
| Nashoba Valley Medical Center | Ayer | MA | -0.23% | -0.30% | -0.33% | -0.21% | -0.56% | -0.51% |
| New England Baptist Hospital | Boston | MA | 0.35% | 0.25% | -0.02% | -0.01% | 0.33% | 0.24% |
| Newton-Wellesley Hospital | Newton | MA | -0.02% | 0.28% | -0.07% | -0.23% | -0.09% | 0.05% |
| Noble Hospital | Westfield | MA | 0.11% | 0.25% | -0.02% | 0.00% | 0.09% | 0.25% |

| | | | | | | | | |
|---|----------------|----|--------|--------|--------|--------|--------|--------|
| North Adams Regional Hospital | North Adams | MA | 0.53% | 0.75% | -0.36% | -0.10% | 0.17% | 0.15% |
| North Shore Medical Center | Salem | MA | 0.02% | -0.05% | 0.00% | 0.00% | 0.02% | -0.05% |
| Norwood Hospital | Norwood | MA | -0.19% | -0.34% | -0.41% | -0.45% | -0.60% | -0.79% |
| Quincy Medical Center | Quincy | MA | 0.12% | 0.20% | -0.43% | -0.63% | -0.31% | -0.43% |
| Saint Anne's Hospital | Fall River | MA | 0.08% | 0.03% | -1.00% | -0.79% | -0.92% | -0.76% |
| Saints Medical Center Inc | Lowell | MA | -0.12% | 0.00% | -0.12% | -0.21% | -0.24% | -0.21% |
| Signature Healthcare Brockton Hospital | Brockton | MA | 0.16% | 0.11% | -0.24% | -0.27% | -0.08% | -0.16% |
| South Shore Hospital | South Weymouth | MA | -0.01% | 0.01% | -0.43% | -0.23% | -0.44% | -0.22% |
| Southcoast Hospital Group, Inc | Fall River | MA | 0.10% | 0.30% | -1.00% | -0.83% | -0.90% | -0.53% |
| St Elizabeth's Medical Center | Brighton | MA | 0.28% | 0.20% | -1.00% | -0.75% | -0.72% | -0.55% |
| St Vincent Hospital | Worcester | MA | 0.16% | 0.03% | -0.32% | -0.30% | -0.16% | -0.27% |
| Sturdy Memorial Hospital | Attleboro | MA | 0.16% | 0.22% | -0.01% | -0.23% | 0.15% | -0.01% |
| Tufts Medical Center | Boston | MA | 0.07% | 0.47% | -1.00% | -0.85% | -0.93% | -0.38% |
| Umass Memorial Medical Center Inc | Worcester | MA | -0.15% | -0.40% | -0.96% | -0.73% | -1.11% | -1.13% |
| Winchester Hospital | Winchester | MA | -0.24% | 0.46% | -0.25% | -0.41% | -0.49% | 0.05% |
| Wing Memorial Hospital And Medical Center | Palmer | MA | 0.39% | 0.17% | -0.91% | -1.39% | -0.52% | -1.22% |

Note: Hospitals that are not listed as being active in the Medicare program have been removed. A [] means that Medicare did not calculate a payment adjustment for the hospital this year.

Source: <http://www.kaiserhealthnews.org/Stories/2015/November/14/value-based-purchasing-medicare-hospitals-chart.aspx>

Table 4

Timely Emergency Department Care

| Measure Description | MASSACHUSETTS AVERAGE | NATIONAL AVERAGE |
|--|--------------------------|---------------------|
| Average time patients spent in the emergency department, before they were admitted to the hospital as an inpatient <i>A lower number of minutes is better</i> | 312 Minutes | 275 Minutes |
| Average time patients spent in the emergency department, after the doctor decided to admit them as an inpatient before leaving the emergency department for their inpatient room <i>A lower number of minutes is better</i> | 117 Minutes | 97 Minutes |
| Average time patients spent in the emergency department before being sent home <i>A lower number of minutes is better</i> | 154 Minutes | 137 Minutes |
| Average time patients spent in the emergency department before they were seen by a healthcare professional <i>A lower number of minutes is better</i> | 37 Minutes | 27 Minutes |
| Average time patients who came to the emergency department with broken bones had to wait before receiving pain medication <i>A lower number of minutes is better</i> | 62 Minutes | 59 Minutes |
| Percentage of patients who left the emergency department before being seen | Not Available | Not Available |
| Percentage of patients who came to the emergency department with stroke symptoms who received brain scan results within 45 minutes of arrival; Higher %s are better | 64% | 51% |

Source:

<http://www.medicare.gov/hospitalcompare>

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