



Major Differences in Improvement in Treating Sepsis for Distinguished Hospital Recipients



Healthgrades 2016 Distinguished Hospital Award for Clinical Excellence Analysis and White Paper

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The Distinguished Hospital Award for Clinical Excellence recipients clearly place a premium on achieving great clinical outcomes and stand out in their overall clinical performance. We sought to find differentiating factors for how these hospitals are performing and found that this year's Distinguished Hospital recipients outperform in their treatment of sepsis specifically. Given the incredible difficulty in treating sepsis, we theorized those hospitals that excel in the treatment of sepsis also perform well in other emergent cohorts. Our findings confirmed that hypothesis.

The Impact of Sepsis

Hospitals are concerned about sepsis for several reasons. According to the Centers for Disease Control and Prevention (CDC), over one million new cases of sepsis occur each year. Sepsis is the ninth leading cause of disease-related deaths, killing more than 258,000 Americans annually.¹ Patients fortunate enough to survive sepsis may suffer from life-changing effects, such as amputations and permanent organ damage. Additionally, many sepsis survivors require re-hospitalization. In 2010, approximately 16% of those with one sepsis hospitalization were readmitted two or more times for treatment within a one-year period.²

The economic cost of treating sepsis is substantial. The Agency for Healthcare Research and Quality lists sepsis as the most expensive condition treated in U.S. hospitals, costing more than \$20 billion in 2011. Out of nearly 39 million hospital stays totaling \$387 billion in 2011, sepsis amounted to 5.2% of the total cost for all hospitalizations.³

The number of sepsis cases each year is increasing. This is likely due to a combination of factors, including: an aging population, increased awareness and tracking of the condition, increasing antibiotic resistance, and an increase in the number of patients undergoing more invasive procedures.

One of the greatest challenges in treating sepsis is recognizing it and doing so quickly. Sepsis is difficult to diagnose because patients with sepsis often have a combination of symptoms, including fever and increased heart and breathing rates, which are common to many other conditions.² Treatment can include prolonged stays in the hospital, often in intensive care units, and often complex, more expensive therapies are needed.

Treatment of sepsis requires a significant amount of coordination among the care team, all within a very short timeframe. Early treatment improves chances for survival. It has been estimated that if early identification and treatment were achieved, there would be 92,000 fewer deaths and 1.25 million fewer hospital days annually. Reductions in hospital expenditures of over \$1.5 billion would also be realized.⁴

Hospitals that invest in education, training, tools and alerts to support the care team can be successful in identifying sepsis and delivering timely treatment for every patient. Of equal importance, it takes public education, government support, and community and professional organization involvement to foster a culture of sepsis awareness and prevention to combat this life-threatening condition.⁵

Sepsis Cases Are Increasing

The Distinguished Hospital Award for Clinical Excellence (DHACE) is meant to identify excellence in treating a broad spectrum of conditions and procedures. It recognizes those hospitals that outperform across at least 21 of 32 clinical areas. Of these clinical areas, there is a subset that drives performance for this distinction:

- Sepsis
- Heart Failure
- Pneumonia
- Total Knee Replacement
- COPD
- Coronary Interventional Procedures
- Acute Myocardial Infarction
- Gastrointestinal Bleed
- Stroke
- Hip Fracture

When we analyzed trends in performance across these top 10 cohorts over the last three years, sepsis was the only cohort that saw year-over-year volume increases. The increases are substantial, jumping 26.5% over a three-year period for recipient hospitals. We observed in the data what other research has shown: the incidence of sepsis is increasing nationwide.

DHACE Recipients Are Improving in Sepsis Care

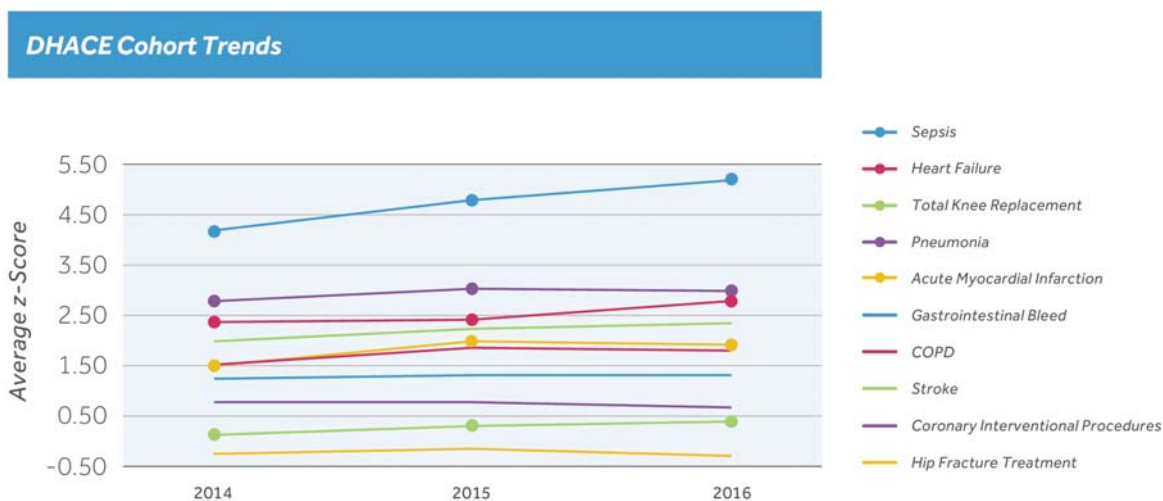
While the incidence of sepsis is increasing, a surprising data point emerged when we reviewed DHACE recipient performance over the three year data set. While all other cohort performance remained relatively stable, the performance in treating sepsis improved.

Remarkably, the hospitals who had already demonstrated a measurable difference in performance compared to non-recipients also saw improved performance in this one cohort.

To measure performance, we compare the actual rates of an outcome (in this case mortality) to the predicted rates. The result of that ratio is a z-score—the more positive the score, the better the performance.

While the other top nine cohorts saw little change in their average z-score, sepsis saw a large increase. The average z-score for sepsis increased from 3.75 in 2014, to 4.65 in 2015, to 5.25 in 2016.

This means that these hospitals not only saw an increase in the volume of sepsis cases, but also a decrease in risk-adjusted mortality for sepsis. The care teams at these hospitals are outperforming in treating an incredibly difficult condition in the midst of increasing cases of it.



Sepsis Performance Is Equivalent Among Teaching and Non-Teaching Award Recipients

Often there are perceptions that the type of hospital, either teaching or non-teaching, will be more or less likely to perform well within the Healthgrades measurements. We reviewed the data to see if hospital type was a factor in our findings regarding sepsis.

First, we inspected the presence of major teaching hospitals, as defined by the American Hospital Association, within the award recipients as compared to their presence within all eligible hospitals.

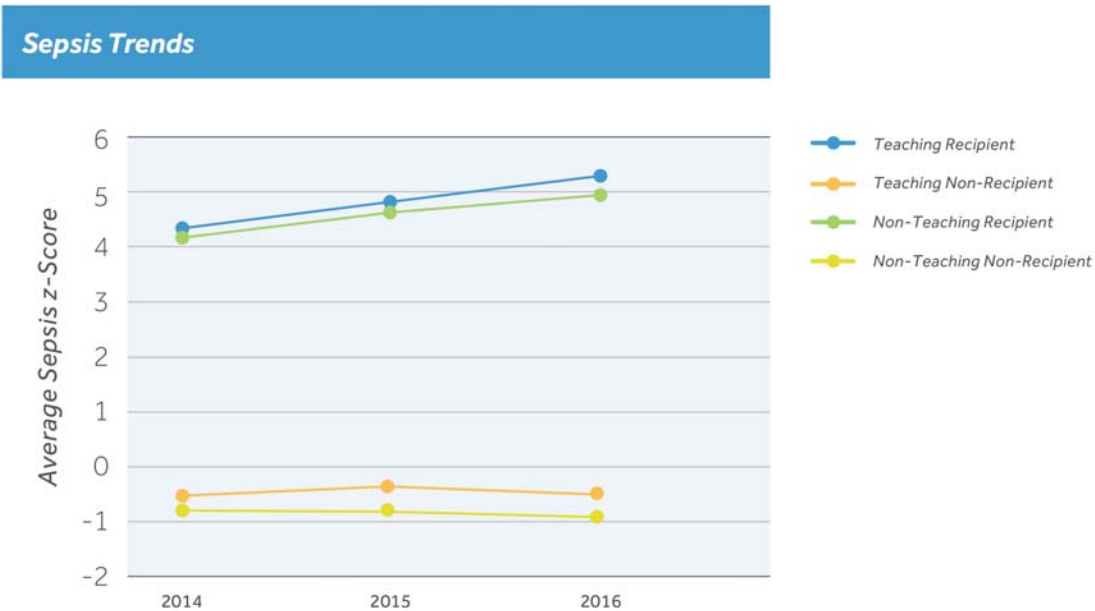
For the last three model years, we see that, on average, teaching hospitals account for:

- **4.24%** of all hospitals
- **14.68%** of hospitals eligible for DHACE
- **23.43%** of all DHACE recipients

This was significant in that while there are fewer teaching hospitals in total, they are well represented within the list of Healthgrades Distinguished Hospital for Clinical Excellence award recipients.

Volume of Teaching Hospitals		
Award Year	Teaching Hospitals	DHACE Recipients that are Teaching Hospitals
2014	4.24%	18.08%
2015	4.25%	23.75%
2016	4.23%	28.46%

This made us wonder if there was a difference in performance for the care of sepsis in the context of hospital type. We found that there was no significant difference between non-teaching and teaching hospitals. Both showed superior performance in sepsis care over the three year data set.



Our findings suggest that, independent of hospital type, DHACE recipient hospitals are performing better than other hospitals across the country in treating sepsis. This observation is noteworthy because both teaching and non-teaching DHACE recipient hospitals are showing significant forward progress in treating sepsis.

Care Teams That Successfully Treat Sepsis Also Outperform in Other Emergent Cohorts

In finding ways to successfully treat sepsis, DHACE recipient hospitals have also been successful in treating other emergent cohorts. We looked for trends in sepsis treatment and its relationship to quality outcomes in other “hospital-wide” conditions.

We found a positive relationship. For every unit of improvement in sepsis risk-adjusted mortality rates, hospitals tend to also see an improvement in other mortality based cohorts. On average, hospitals that saw a 10% reduction in risk-adjusted mortality in sepsis care also saw the following reductions in risk-adjusted mortality rates:

On average hospitals that saw a 10% reduction in risk-adjusted mortality in Sepsis care also saw:

A 4.3% reduction in risk-adjusted mortality rates during care for Heart Failure

A 3.3% reduction in risk-adjusted mortality rates during care for COPD

A 3.9% reduction in risk-adjusted mortality rates during care for Pneumonia

A 3.2% reduction in risk-adjusted mortality rates during care for Stroke

A 4.1% reduction in risk-adjusted mortality rates during care for Respiratory Failure

These findings are important in that care teams that improve sepsis treatment are also improving in other areas. For example, on average, hospitals that saw a 50% drop in risk-adjusted mortality in sepsis also saw a 20% drop in risk-adjusted mortality for respiratory failure.

Interestingly, the opposite is also true. On average, hospitals that saw a 50% *increase* in risk-adjusted mortality in sepsis also saw a 20% *increase* in risk-adjusted mortality for respiratory failure.

This indicates that when a hospital care team improves performance in sepsis care, it not only addresses a major cause of mortality, but sees positive affects in other areas of care. Treating sepsis successfully requires interdisciplinary teamwork, coordination of care, and focus. This study shows that hospital care teams that focus on successfully treating sepsis also provide clear benefits to patients across many medical cohorts.

Sepsis Alliance - Committed to Awareness and Education

The impact of sepsis is significant, yet its occurrence is on the rise. Few consumers are aware of this killer, unlike other diseases or conditions that have more notoriety. An unintended consequence of the lack of public knowledge could be increased time to treatment and lessened focus or fewer resources to support hospital efforts to combat sepsis. Enter Sepsis Alliance.

Sepsis Alliance is a charitable organization run by a team of dedicated laypeople and healthcare professionals who share a strong commitment to battling sepsis. The organization was founded in 2007 by Dr. Carl Flatley, whose daughter Erin died of sepsis when she was 23 years old. The organization was created to raise sepsis awareness among both the general public and healthcare

professionals. Its mission is simple and powerful: Save lives by raising awareness of sepsis as a medical emergency.

With this commitment, Sepsis Alliance works tirelessly to produce as much information and educational material as is possible. This material is meant to help the general public become aware of what sepsis is and how deadly it can be. Additionally, it strives to provide appropriate resources for healthcare professionals to drive better performance in sepsis treatment. More information can be found at www.Sepsis.org.

About Healthgrades

More than one million people a day use Healthgrades for objective, comprehensive, consistent, and credible consumer healthcare information. Since 1998, Healthgrades has provided consumers critical information at the time they need it most: when selecting a physician or hospital to care for themselves or family members.

Healthgrades consumer information includes:

- Risk-adjusted hospital quality outcomes based upon analysis of the Centers for Medicare and Medicaid Services (CMS) MedPAR data.
- Hospital readmission rates and timely and effective care measures based on CMS Hospital Compare methodology.
- Hospital patient experience metrics based on Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) data.
- Hospital patient safety performance outcomes for 13 indicators of patient safety developed by the Agency for Healthcare Research and Quality.
- Information on more than 900,000 physicians in all 50 states and the District of Columbia.

For more information on our hospital quality methodologies see: Healthgrades Mortality and Complications Outcomes 2016 Methodology (www.healthgrades.com/quality/methodology-mortality-and-complications-outcomes) and Healthgrades MedPAR-based Awards 2016 Methodology (www.healthgrades.com/quality/methodology-medpar-awards-methodology).

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