The Business Case for Fighting Nosocomial Infections

Objective

To assess the business case for hospitals reducing the number of hospital acquired conditions (HACs).

Population Studied

This analysis utilized Premier's Perspective™ data for more than 5 million acute inpatients from January through December 2008. The dataset included 413 acute care hospitals representing both teaching (*N=56*) and non-teaching (*N=357*) hospitals that ranged in bed size from 22 to 1836 (*median=269*) and were distributed across 39 states.

Study Design

In the fiscal years 2008 and 2009 Inpatient Prospective Payment System rules, the Centers for Medicare & Medicaid Services (CMS) finalized a policy whereby 10 categories of HACs will no longer qualify cases for higher payment for discharges occurring on or after October 1, 2008. This study focuses on central line associated blood stream infections (CL-BSI) which are categorized into three patient groups: 1) patients with CL-BSI where the infection was present on admission (N = 4,386), 2) hospital-acquired CL-BSI (N=3,224), and 3) patients without CL-BSI (N=270,606).

These groups were examined for differences in mortality rates, lengths of stay (LOS), and wage adjusted costs, as well as use of post-acute care (PAC). Analyses were conducted for four populations: 1) Medicare, 2) Medicaid, 3) other payor and 4) all patients. Basic wage adjusted payment was also analyzed for the Medicare population.

Length of Stay - The patient's overall LOS in days was calculated by subtracting the date of admission from the discharge date and adding one.

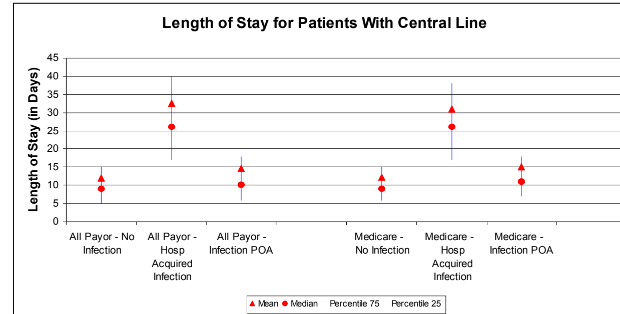
Mortality - The patient's discharge status was examined to identify a value of "20 – Expired."

Hospital Cost - The hospital cost data in Perspective™ are from a hospital's cost accounting system (58%) or estimated using a ratio of cost to charges (42%). Detailed cost information is provided at the total (fully allocated), variable and fixed level.

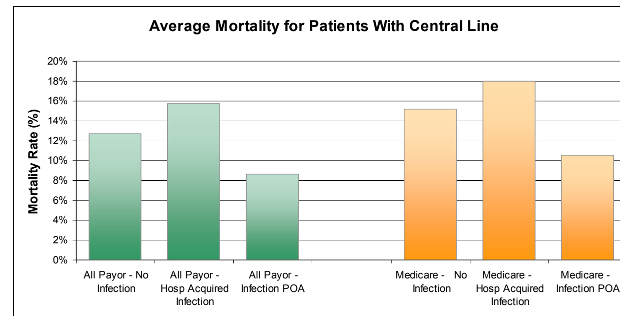
Medicare Payment – The Medicare payment was calculated by multiplying the Medicare Severity Diagnosis Related Group case weight times the hospital's Medicare wage adjusted payment rate.

Principal Findings

Length of Stay - Patients with a hospital-acquired CL-BSI have significantly longer [ANOVA p <.001] LOS (32.4 days) than patients with an infection at admission (14.6 days) or patients without an infection (12.1 days).

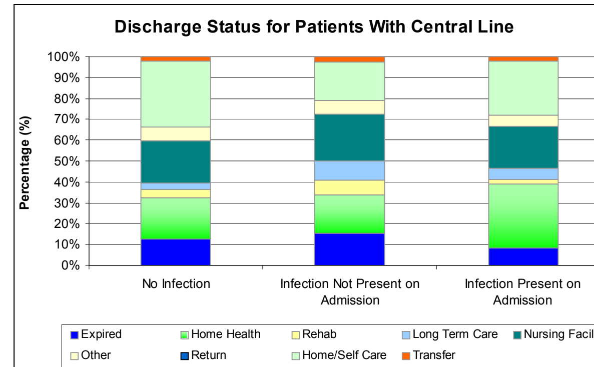


Mortality - Patients with a hospital-acquired CL-BSI have significantly higher [ANOVA p <.001] mortality rates (15.8%) than patients with an infection at admission (8.6%) or patients without an infection (12.8%).

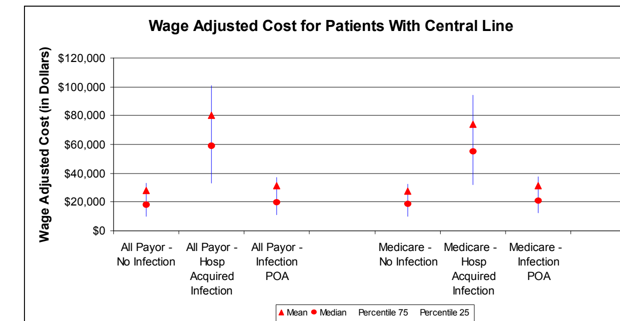


Post Acute Care - Patients with a hospital-acquired CL-BSI have a higher use of PAC. In general, patients with a hospital-acquired CL-BSI are *less* likely to be discharged to home/self care (18.7% compared to 31.4% for patients with no infection and 25.9% for patients with a POA infection) and home health (18.8% compared to 19.8% for patients with no infection and 30.5% for patients with an infection POA). They were also *more* likely to be discharged to rehabilitation facilities (6.8% compared to 3.9% for no infection and 2.5% for a POA infection) or to a long term care facility (9.5% compared to 3.4% for no infection and 5.1% for a POA infection).

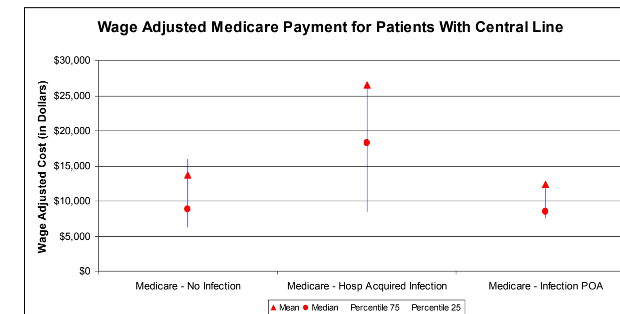
Patients with an infection POA had the highest percentage discharges to home health (30.5% compared to 19.8% for patients with no infection and 18.8% for patients with a hospital acquired infection).



Wage Adjusted Cost - Patients with a hospital-acquired CL-BSI have significantly higher [ANOVA p <.001] costs ($80,290) than patients with no infection ($31,389) or an infection POA ($27,766).



Medicare Payment – Medicare patients with a hospital-acquired CL-BSI have significantly higher [ANOVA p <.001] payment ($26,308) when not accounting for the HAC policy payment reduction than patients with an infection POA ($12,240) or patients without an infection ($13,491).



As seen in the table below, hospitals generally lost money on CL-BSI cases, but the losses for hospital-acquired CL-BSI far outweighed the others. Thus, it is in the hospitals' interest to take action to improve care including expending funds on prevention activities.

	Mean Wage Adjusted Payment	Mean Wage Adjusted Total Cost	Difference
No Infection	$13,660.77	$27,230.59	$13,569.82
Hospital Acquired Infection	$26,506.55	$73,989.35	$47,482.80
Infection POA	$12,307.37	$31,615.84	$19,308.47

Conclusions

While the prevalence of CL-BSIs across all payors is quite low (1.2% of all central line patients) the impact can be catastrophic for patients and detrimental to hospital finances. Patients who acquire a CL-BSI at the hospital have longer lengths of stay, higher mortality rates, and higher costs than patients with CL-BSIs present on admission or patients without an infection. Results were similar for each population (all patients, Medicare patients, Medicaid patients, and other payor patients).

Policy Implications

Reduced payment under the CMS HAC policy will be a small portion of the total amount hospitals lose on CL-BSI cases due to increased resource utilization as evidenced by the higher than average LOS and costs. A strong business case exists for hospitals to invest in education, training and technology that will reduce the number of CL-BSIs. The increased mortality and LOS suggests that this is an important area for further hospital action to provide improved patient care and satisfaction, while the increased costs and PAC use suggests that this is an important area for further payment policy development to increase the value of healthcare.

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