

Table 1: Attributable Costs and Length of Stay by Type of Hospital-Acquired/Healthcare-Associated Infection

HAI	Attributable Cost ^a	Additional Length of Stay (LOS)	Quality of Results	
Clostridium Difficile	\$2,992-\$29,000/case ¹ (USD) Median 9,391/case ¹ (USD)	2.7-21.3 days ¹ Median 5.8 days/case ¹	high	
	£4,577/case(Ireland) –£8,843/case(Germany) ² (2010 GBP)	2.7 days (Finland) – 18 days (Netherlands) ²	high	
	\$11,285/case (95% CI, \$9,118-\$13,574) ³ (USD)	3.3 days/case (95% CI, 2.7-3.8) ³	high	
	€4067-€9276/case ³ Average €14,859/case ⁴	7-37 days ⁴	low	
Rotavirus gastroenteritis in Western Europe's pediatric population	\$3,752/case (Austria, 2001) - \$7856/case (Ireland, 2003) ⁵ 5-9x greater than community acquired Rotavirus ⁵	4.4 days ⁵	low	
Blood Stream Infection (BSI)	Regression analysis \$3,249/case (USD, Fetal '06)- \$86,500/case (USD, '06) ⁶ Matched Comparisons \$9,661/case (USD, MSSA '99) - \$58,344/case (USD, PICU '01) ⁶	n/a	n/a ^c	
	\$3,061/case (US avg., all patients) ⁷ \$40,000/survivor (ICU) ⁷	+7 days (US) ⁷ +20-24 days (ICU) ⁷	low	
	\$36,441/case (USD, mean) SD \$37,078 ⁸ Range \$1822-\$107,156/case ⁸	n/a	high	
	Catheter-related Infections	BSI: \$6,005-\$9,738/case ⁹ (USD) Local: \$399/case ⁹ (USD)	ICU patients: 6.5 ICU days & 6 ward days ⁹	low high
Catheter-associated Blood Stream Infection (CABSI)	\$41,900-\$123,600/case unadjusted mean/medians ('09 USD) ¹⁰ \$21,400/case & \$110,800/case Regression adjusted means ('09 USD) ¹⁰ \$960 million - \$18.2 billion annually in US national preventable costs) ('09 USD) ¹⁰	n/a	low high low ^b	
	Central-line Associated Blood Stream Infection (CLABSI)	\$45,814/case (95% CI, \$30,919-\$65,245) (2012 USD) ³	10.4 days (95% CI, 6.9-15.2) ³ MRSA 15.7 days (95% CI, 7.9-36.5) ³ ICU days 6.9 (95% CI, 3.5-9.6) ³	high, meta-analysis based on 5 studies.
	Catheter Associated Urinary Tract Infection (CAUTI)	n/a	Random effects model: ICU 12 days/case (mean), range 5.67-21 days ¹¹ ; hospital 21 days/case (mean), range 13-33.4 days ¹¹	high
	\$896/case (95% CI, \$603-\$1189) ³	n/a	high, 2 study meta-analysis	

HAI	Attributable Cost ^a	Additional Length of Stay (LOS)	Quality of Results
CAUTI (cont.)	Unadjusted mean \$1,200-\$4,700/case ('09 USD) ¹⁰ \$115 million – \$1.82 billion annual US national preventable costs ('09 USD) ¹⁰	n/a	low ^b
Urinary Tract Infection (UTI)	Regression analysis \$3,249/case (fetal '06)- \$6,536/case (non-fatal, '06) ⁶ Matched Comparisons \$558/case ('80) ⁶ Case Review \$146('80)-1,214/case ('02) ⁶	n/a	n/a ^c
	\$1006/case (USD, mean) SD \$503 ⁸ Range \$650-1361/case ⁸	n/a	high
	\$593-\$931/case (US avg. costs) ⁷	1-4 days (avg. US & UK) ⁷	low
Surgical Site Infections (SSI)	2x costs of uninfected patients; range 34-226% increase in costs for patient with SSI ¹²	Increased by 46-310% compared to patients without SSI ¹²	low
	£1,041/case (GBP) ⁷ \$2734/case (USD, average cost) ⁷	+8.2 days (UK) ⁷ +7 days (US) ⁷	low
	Unadjusted mean/median costs \$5,600-\$12,900/case ('09 USD) ¹⁰ Regression adjusted mean \$2,200/case ('09 USD) ¹⁰ \$166 million - \$345 million national preventable hospital costs ('09 USD) ¹⁰	n/a	low high low ^b
	Regression analysis \$1,574/case (USD, '06)- \$132,507/case (USD, Children, '03) ⁶ Matched Comparisons \$3,089/case (USD, '99) - \$62,908/case (USD, MRSA '03) ⁶ Case Review \$1,329/case (USD, '80) ⁶	n/a	n/a ^c
	\$25,546/case (USD, mean) SD \$39,875 ⁸ Range = \$1783-134,602/case (USD) ⁸	n/a	high
	\$20,785/case (95% CI, \$18,902-22,667) ³ (USD)	11.2 days (95% CI, 10.5-11.9) ³ MRSA 23.0 (95% CI, 14.3-31.7) ³	high
Musculoskeletal infections post-surgery Musculoskeletal infections post-surgery	15% more costly than community acquired musculoskeletal infections ¹³ MRSA infections \$40,000/case (USD) compared to uninfected control ¹³	3.7-5.4 days ¹³ Revisions for infection have LOS 2.5s> other revisions ¹³ MRSA infections have LOS 16 days greater than uninfected controls ¹³	high high

HAI	Attributable Cost ^a	Additional Length of Stay (LOS)	Quality of Results
Methicillin Resistant Staphylococcus Aureus (MRSA)	\$612-\$118,415/case (USD) ¹⁴	4.5-50 days ¹⁴	low
	\$21,251-113,852/case (USD, median total costs) ¹⁵ 1.3-2.7 times greater than Methicillin Susceptible Staphylococcus Aureus (MSSA) ¹⁵	5-10 days compared to MSSA ¹⁵	low
	BSI: \$17,422/case compared to MSSA ¹⁶	n/a	high
	2.5x greater than MSSA in matched patients ¹⁷	23.3 days/case for resistant infections, compared to susceptible infections ¹⁷	low
	\$2,500/case (USD) ¹⁸	0 days (hospital)-19.2 days(nursing home) ¹⁸	low
	\$3,700-15,422/case (USD) compared to MSSA ¹¹ \$41,274/case (USD) compared to control ¹¹	2 days/case compared to MSSA ¹¹	low
	n/a	SSIs: 23.0 (95% CI, 14.3-31.7) ³	high
	n/a	Musculoskeletal infections: 16 days greater than uninfected controls ¹³	high
Antibiotic resistant Acinetobacter	4 times greater (hospital charges) ¹⁸ 6 times greater (pharmacy charges) ¹⁸	13 days/case compared to uninfected controls ¹⁸ (single study, controlled for severity of illness)	low
Pneumonia	\$4947/case (US avg. all patients) ⁷	+6 days (US, all patients) ⁷	low
	Case Review \$878/case (USD, '80) ⁶	n/a	n/a ^c
	n/a	+15 days in HIV + patients ²⁰	low
Ventillator-associated Pneumonia (VAP)	\$10,019 – 13,647/case (USD) ²¹	Random effects model: 6.10 days/case (95% CI 5.32-6.87 days) ²¹	high
	≈\$40,000/case (USD) ²²	n/a	low
	n/a	9.2-20 days (ICU) ⁷	low
	Unadjusted means \$80,200-\$324,00/case('09 USD) ¹⁰	n/a	low
	Regression adjusted mean \$23,000/case ('09 USD) ¹⁰		high
	\$2.19 billion - \$3.17 billion national preventable costs annually ('09 USD) ¹⁰		low ^b
	Regression analysis \$11,897/case (USD, ICU '03) - \$89,187/case (USD, '06) ⁶ Matched Comparisons \$57,158/case(USD, '03) ⁶	n/a	n/a ^c
\$9969/case (USD, mean) SD \$2920 ⁸	n/a	high	

HAI	Attributable Cost ^a	Additional Length of Stay (LOS)	Quality of Results
VAP (cont.)	Range \$7904 - \$12,304/case (USD) ⁸ \$40,144/case (95% CI, \$36,286-\$44,220) ²³ (USD)	13.1 days (95% CI, 11.9-14.3) ³ ICU days 8.4 (95% CI, 7.8-9.0) ³	high, Monte Carlo meta-analysis based on 4 studies
VAP in Pediatric ICU (PICU)	\$30,482 - 30,931/case (USD) ²³	21-33.7 PICU days ²³	low
Ventillator-associated Tracheobronchitis (VAT)	n/a	One of 4 studies found no attributable increase in LOS, while three found an increased LOS attributable to VAT ²⁴	high
Respiratory Tract Infection (RTI)	Regression analysis \$3,249/case (USD, fetal '06)-\$50,362/case (USD, PICU '01) ⁶ Matched Comparisons \$1,018/case (USD, '80) - \$81,208/case (USD, '03) ⁶ Case Review \$636/case (USD, '80)-\$3,198/case (USD, '88) ⁶	n/a	n/a ^c
SSIs, CLABSI, CAUTI, VAP, CDI together	Total annual costs for the 5 major infections (US) \$9.8 billion (95% CI, \$8.3-\$11.5 billion) ³	n/a	high
Overall impact of Nosocomial infections	\$1,833/case(USD, '85) ⁷ \$4.5 million annual cost (USD) ⁷	n/a	low

a Unless otherwise noted, these are the actual costs attributable to each case of the healthcare-associated infection not the charges the hospital billed.

b The researchers asked the primary outcome of this study, an estimate of the US national cost of avoidable HAIs, not be used to make policy decisions because of its limitations.

c This review's primary focus was the analytical methodology used to estimate costs. Although Regression Analysis, Matched Comparisons, and Case Reviews can be used more stringently, not enough information was given in this review to make specific quality judgments.

Note: One study reviewed²⁵ focused on the transferability of cost estimates themselves. Although it did list estimated costs of HAI they could not be summarized in this table.

Table 1 References

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