

Hospital-acquired infections in upstate New York

Hospital-acquired surgical site and central line-associated bloodstream infection rates, 2008-2011

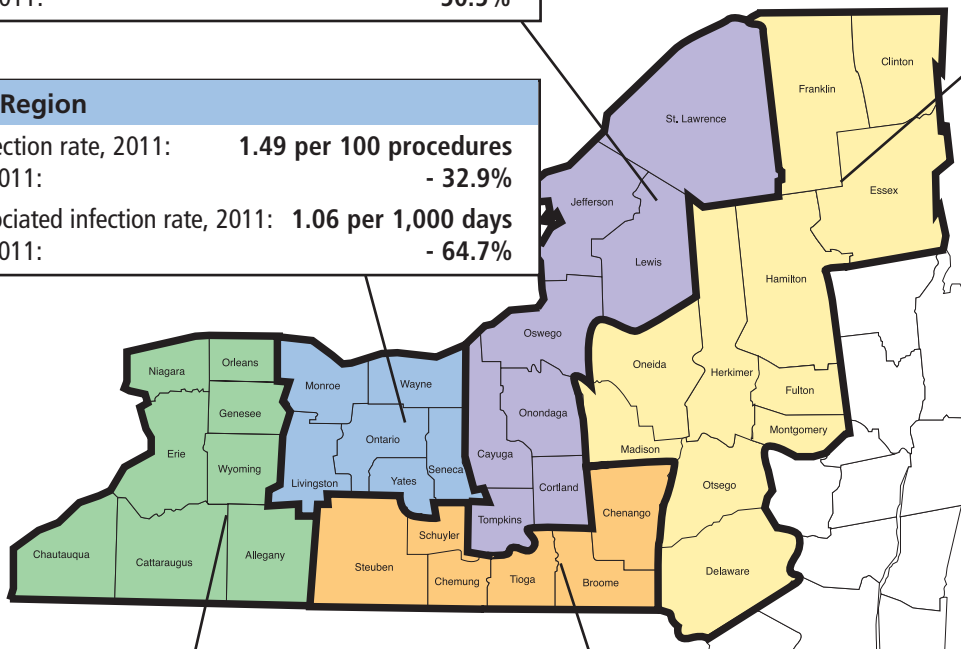
Upstate New York	
Surgical site infection rate, 2011:	1.97 per 100 procedures
Change, 2008-2011:	- 7.9%
Central line-associated infection rate, 2011:	1.12 per 1,000 days
Change, 2008-2011:	- 45.9%

New York State	
Surgical site infection rate, 2011:	2.10 per 100 procedures
Change, 2008-2011:	- 3.2%
Central line-associated infection rate, 2011:	1.37 per 1,000 days
Change, 2008-2011:	- 42.4%

Central New York Region	
Surgical site infection rate, 2011:	1.85 per 100 procedures
Change, 2008-2011:	10.8%
Central line-associated infection rate, 2011:	1.07 per 1,000 days
Change, 2008-2011:	- 50.5%

Utica/Rome/North Country Region	
Surgical site infection rate, 2011:	1.91 per 100 procedures
Change, 2008-2011:	- 12.8%
Central line-associated infection rate, 2011:	.34 per 1,000 days
Change, 2008-2011:	- 78.6%

Finger Lakes Region	
Surgical site infection rate, 2011:	1.49 per 100 procedures
Change, 2008-2011:	- 32.9%
Central line-associated infection rate, 2011:	1.06 per 1,000 days
Change, 2008-2011:	- 64.7%



Surgical site infections "are infections that occur after the operation in the part of the body where the surgery took place. Most surgical site infections only involve the skin surrounding the incision; others may be deeper and more serious."¹

Central line-associated bloodstream infections can occur "when microorganisms (e.g., bacteria, fungi) travel around or through the [central line] tube, attach and multiply on the tubing or in fluid administered through the tubing, and then enter the blood."²

Western New York Region	
Surgical site infection rate, 2011:	2.34 per 100 procedures
Change, 2008-2011:	-0.4%
Central line-associated infection rate, 2011:	1.52 per 1,000 days
Change, 2008-2011:	- 13.6%

Southern Tier Region	
Surgical site infection rate, 2011:	2.35 per 100 procedures
Change, 2008-2011:	4.0%
Central line-associated infection rate, 2011:	1.13 per 1,000 days
Change, 2008-2011:	- 8.1%

Sources: New York State Department of Health. "Hospital-Acquired Infections, New York State 2011." September 2012. http://www.health.ny.gov/statistics/facilities/hospital/hospital_acquired_infections/2011/docs/hospital_acquired_infection.pdf
 New York State Department of Health. "Hospital-Acquired Infections, New York State 2010." Sept. 20, 2011. http://www.health.ny.gov/statistics/facilities/hospital/hospital_acquired_infections/2010/docs/hospital_acquired_infection.pdf
 New York State Department of Health. "Hospital-Acquired Infections, New York State 2009." Sept. 1, 2010. http://www.health.ny.gov/statistics/facilities/hospital/hospital_acquired_infections/2009/docs/hospital_acquired_infection.pdf

Note: Upstate New York refers to the counties highlighted in the map above.

Hospital-acquired infections: A serious but avoidable public health problem

In New York state and nationwide, hospital-acquired infections are adverse events that reduce a patient's ability to heal, causing potentially avoidable suffering and increasing mortality risk. They are also costly to the health system. According to the most current figures from the Centers for Disease Control and Prevention, an estimated 1.7 million hospital-acquired infections occurred in the United States during 2002, resulting in 99,000 deaths³ and adding billions in potentially avoidable U.S. health expenditures.⁴

About one in 20 Americans admitted to a hospital contracts an infection associated with the hospital stay.⁵ Catheter-associated urinary tract infections, central line-associated bloodstream infections, ventilator-associated pneumonia and surgical site infections make up more than 80 percent of these infections.⁶ Were the government to mandate that these hospital-acquired infections be reported as infectious diseases, together they would rank highest among the 51 reportable diseases in the U.S.⁷ If hospital-acquired infections were included in listings of leading causes of death, they would have ranked sixth in the nation in 2011.⁸

Each year hospital-acquired infections result in extended hospital stays and expensive identification and treatment measures. Treating hospital-acquired infections increases the financial strain on the U.S. health care system. The CDC estimates, based on pooled data from previous research, that direct costs of treating hospital-acquired infections range from \$28 billion to \$45 billion (2007 dollars).⁹ Adjusted for inflation, the estimated costs range from \$30.5 billion to \$59.4 billion in 2011 dollars.¹⁰ These figures exclude indirect costs, such as lost productivity and diminished quality of life.¹¹

Hospital-acquired infections also are becoming increasingly challenging to treat, as antibiotic-resistant bacterial strains emerge, particularly in intensive care units.¹² In 2000, a groundbreaking World Health Organization report warned that absent an intensive, worldwide effort against infectious disease, the emergence of resistant infections could outpace the development of drugs that can treat them effectively. WHO estimated that drug-resistant microbes cause up to 60 percent of hospital-acquired infections worldwide.¹³

Hospital-Acquired Infection

New York state defines a hospital-acquired infection as "any localized or systemic patient condition that:

(a) resulted from the presence of an infectious agent or agents, or its toxin or toxins as determined by clinical examination or by laboratory testing; and

(b) was not found to be present or incubating at the time of admission unless the infection was related to a previous admission."¹⁴

Hospital-acquired infections in New York state: The human and financial toll

The estimated 2011 rates of surgical site infections and central line-associated bloodstream infections in New York state (the two infection types that hospitals were first required to report to the state) appear on page 1, along with the corresponding percentage change in these rates between 2008 and 2011. Infection rates have decreased in upstate New York and New York state as a whole. Differences in hospital practices, which may result in varying degrees of successful infection control, may partially explain the regional variations shown.

About this report

Describing the impact of hospital-acquired infections on upstate New York and New York state residents and the public health initiatives that seek to reduce the burden, this report:

- Presents data on surgical site infections and central line-associated bloodstream infections that New York state requires hospitals to track, analyze and report.
- Applies CDC estimates of the annual number of infections, expected deaths and incremental costs (adjusted to 2011 dollars) of hospital admissions in each region of upstate New York and statewide.
- Estimates the potential costs saved and deaths avoided by reducing hospital-acquired infection rates.
- Highlights collaborative efforts to control hospital-acquired infections.

New York state refines systematic reporting to meet growing challenges

The data presented here are largely available due to the recognition that systematic reporting is central to hospital-acquired infection control programs. In the 1970s, the CDC's landmark *Study on the Effectiveness of Nosocomial Infection Control* established the effectiveness of these programs.¹⁵ Data management systems allow hospitals to monitor process and outcome measures related to infection rates. The data can be used in a variety of ways to support hospital-acquired infection control. Private reporting systems, for instance, assist health care providers in improving service delivery quality. Public reporting systems have the added benefit of sharing data with consumers who wish to evaluate a health care institution's infection rates.¹⁶

The quality and reliability of hospital-acquired infection data varies across U.S. states according to state-determined standards, infection type, data completeness and compliance with reporting requirements. Between 2003 and 2009, New York and 26 other states adopted laws requiring public reporting of infectious diseases.¹⁷ Hospitals in all states report data on at least one type of hospital-acquired infection to the CDC's National Healthcare Safety Network.¹⁸

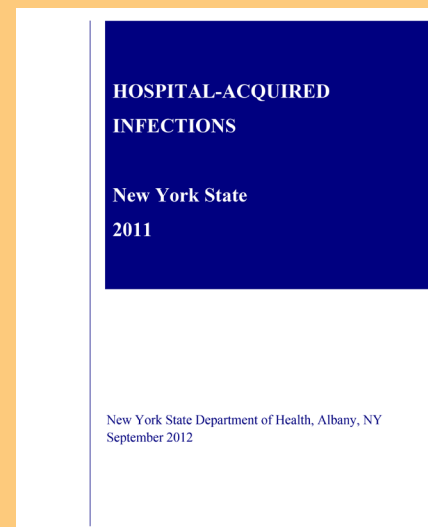
New York has refined and expanded its reporting capabilities each year since the passage of its 2005 hospital-acquired infection law.¹⁹ The first year of mandatory reporting began with data collected during a 2007 pilot phase, during which each institution received its own data as feedback to assess accuracy and recommend reporting system improvements. New York state began public reporting during 2008, when it made aggregate 2007 data publicly available.

Reports for the next three years contained hospital-specific rates of central line-associated bloodstream infections across adult, pediatric and neonatal intensive care unit populations. They also contained surgical site infections reported for three types of procedures: colon surgery, coronary artery bypass graft surgery, hip replacement/revision surgery.

New York state plans to continue expanding its list of reportable hospital-acquired infections.²⁰ The state chose the initial two infection types in alignment with federal government selection criteria:

- High cost, high volume or both,
- Commanding high reimbursement when presented as a secondary diagnosis, and
- Presumed preventable according to available evidence-based guidelines.²¹

Detailed information regarding the infection rates of New York state hospitals is available on the New York State Department of Health website. Click on the image below or go to the Hospital-Acquired Infection (HAI) Rates in New York State Hospitals page on the New York State Department of Health website for the most current: New York State Department of Health. "Hospital-Acquired Infections – New York State – 2011." September 2012



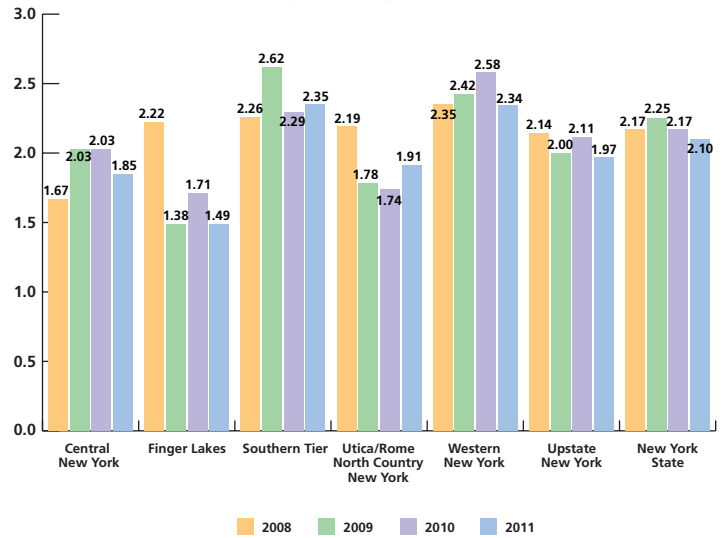
Surgical site infection rates in upstate New York: An 8 percent decrease since 2008

A surgical site infection is considered to be hospital-acquired if it occurs at the surgical site within 30 days of an operation (or within one year if the surgery involves a foreign body implant, such as a heart valve or joint).²²

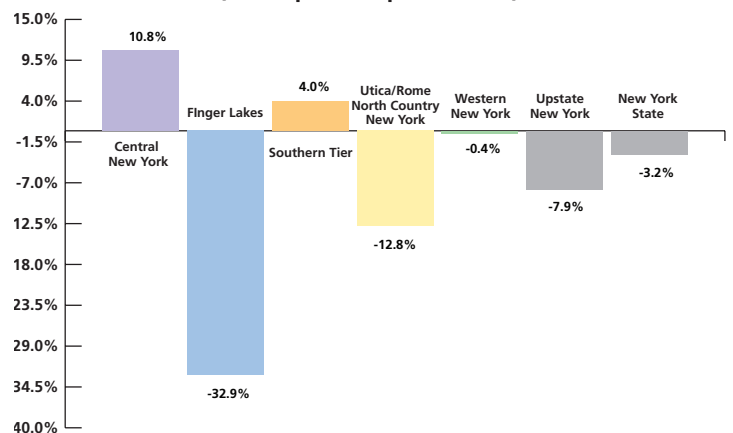
Analysis of surgical site infections publicly reported to New York state between 2008 and 2011 shows that:

- The infection rate in upstate New York dropped 7.9 percent, from 2.14 per 100 procedures in 2008 to 1.97 per 100 procedures in 2011. Statewide, the infection rate decreased 3.2 percent, from 2.17 infections per 100 procedures to 2.10 infections per 100 procedures.
- Each year, infection rates in upstate New York hospitals as a whole were lower, compared to statewide infection rates.
- The largest rates of decline occurred in Finger Lakes hospitals (by 32.9 percent) and Utica/Rome/North Country hospitals (by 12.8 percent).
- Rates increased in hospitals in two regions, Central New York (10.8 percent) and the Southern Tier (4.0 percent). Although Central New York was the region with the greatest rate increases over the four years, hospitals in that region had the lowest 2008 rate and the second lowest 2011 rate.
- Surgical site infection rates changed little in Western New York, where they generally exceeded rates in other regions and New York state.

Surgical site infection rates:*
Upstate New York and New York state
hospitals by region, 2008-2011
(Rates per 100 procedures)



Change in surgical site infection
rates from 2008 to 2011:*
Upstate New York hospitals and New York
state hospitals by region
(Rates per 100 procedures)



* Includes infections following colon surgery, coronary artery bypass graft and hip replacement/revision.

Sources: New York State Department of Health. "Hospital-Acquired Infections, New York State 2011." September 2012.
http://www.health.ny.gov/statistics/facilities/hospital/hospital_acquired_infections/2011/docs/hospital_acquired_infection.pdf

New York State Department of Health. "Hospital-Acquired Infections, New York State 2010." Sept. 20, 2011.
http://www.health.ny.gov/statistics/facilities/hospital/hospital_acquired_infections/2010/docs/hospital_acquired_infection.pdf

New York State Department of Health. "Hospital-Acquired Infections, New York State 2009." Sept. 1, 2010.
http://www.health.ny.gov/statistics/facilities/hospital/hospital_acquired_infections/2009/docs/hospital_acquired_infection.pdf



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Number of surgical procedures, surgical site infections and surgical site infection rates: Upstate New York and New York state hospitals by region, 2011

	Number of surgical procedures	Number of surgical site infections*	Rate (infections per 100 procedures)
Central New York	4,426	82	1.85
Finger Lakes	4,958	74	1.49
Southern Tier	1,747	41	2.35
Utica/Rome/North Country	2,614	50	1.91
Western New York	6,188	145	2.34
Upstate New York	19,933	392	1.97
New York State	64,919	1,365	2.10

* Includes infections following colon surgery, coronary artery bypass graft and hip replacement/revision.

Source: New York State Department of Health. "Hospital-Acquired Infections, New York State 2011." September 2012.
http://www.health.ny.gov/statistics/facilities/hospital/hospital_acquired_infections/2011/docs/hospital_acquired_infection.pdf

- Of the nearly 20,000 surgical procedures performed in upstate New York hospitals during 2011, almost 400 associated surgical site infections occurred, a rate of 1.97 per 100 procedures.
- There were approximately 65,000 procedures and nearly 1,400 surgical site infections statewide, an infection rate of 2.10 per 100 procedures.
- Hospitals in the Finger Lakes had the lowest infection rate among those in upstate New York (1.49 per 100 procedures).
- Hospitals located in the Southern Tier and Western New York had the highest infection rates (2.35 and 2.34 per 100 procedures, respectively).

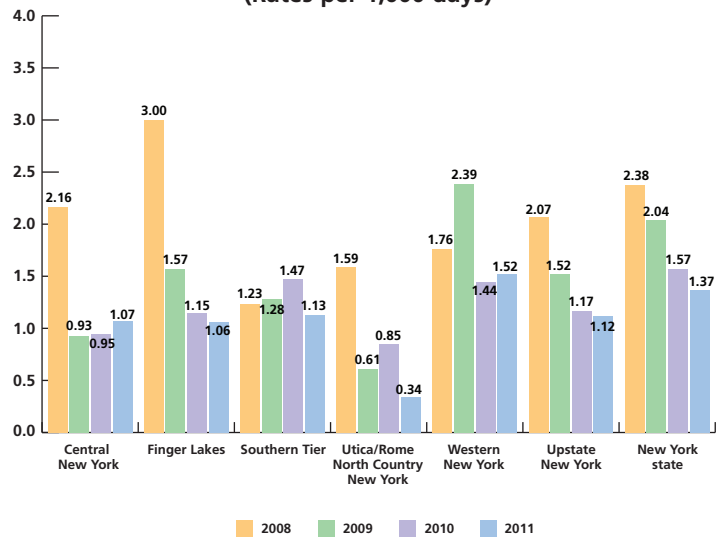
Central line-associated bloodstream infection rates in upstate New York: A 46 percent decrease since 2008

Central line-associated bloodstream infections are serious, with an estimated mortality rate of 12 percent to 25 percent.²³

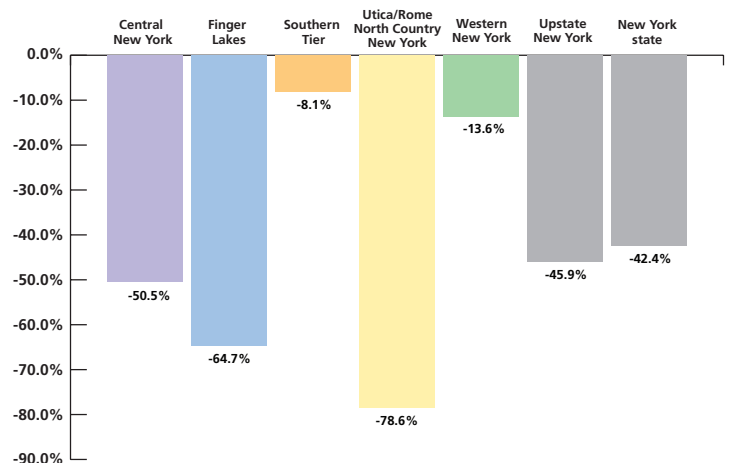
Data from the four combined years during which New York state hospitals were required to report central line-associated bloodstream infections indicate that:

- Central line-associated bloodstream infections decreased in all upstate New York regions.
- The rate of this type of infection was lower for upstate New York hospitals as a whole, compared to the statewide rate.
- In upstate New York, this rate dropped 45.9 percent, from 2.07 infections per 1,000 days to 1.12 per 1,000 days; and declined 42.4 percent statewide, from 2.38 infections per 1,000 days to 1.37 per 1,000 days. Rates statewide remained higher than those in upstate New York as a whole, despite this decline.
- Finger Lakes hospitals had the highest infection rate in 2008 (3.0 per 1,000 days) and the second lowest in 2011 (1.06 per 1,000 days).
- The largest rate of decline (78.6 percent) occurred in hospitals in the Utica/Rome/North Country region.
- The percentage decrease in infection rates between 2008 and 2011 in Utica/Rome/North Country (78.6 percent), Finger Lakes (64.7 percent) and Central New York (50.5 percent) exceeded the percentage decline in the upstate New York infection rate (45.9 percent).

**Central line-associated bloodstream infection rates:
Upstate New York and New York state hospitals
by region, 2008-2011**
(Rates per 1,000 days)



**Change in central line-associated bloodstream
infection rates from 2008 to 2011:
Upstate New York and New York state
hospitals by region**
(Rates per 1,000 days)



* Includes infections following colon surgery, coronary artery bypass graft and hip replacement/revision.

Sources: New York State Department of Health. "Hospital-Acquired Infections, New York State 2011." September 2012.
http://www.health.ny.gov/statistics/facilities/hospital/hospital_acquired_infections/2011/docs/hospital_acquired_infection.pdf

New York State Department of Health. "Hospital-Acquired Infections, New York State 2010." Sept. 20, 2011.
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http://www.health.ny.gov/statistics/facilities/hospital/hospital_acquired_infections/2009/docs/hospital_acquired_infection.pdf

**Number of central line days, central line-associated bloodstream infections and central line-associated bloodstream infection rates:
Upstate New York and New York state hospitals by region, 2011**

	Central line days	Central line-associated bloodstream infections	Rate (infections per 1000 days)
Central New York	25,256	27	1.07
Finger Lakes	19,842	21	1.06
Southern Tier	7,090	8	1.13
Utica/Rome/North Country	11,636	4	0.34
Western New York	28,329	43	1.52
Upstate New York	92,153	103	1.12
New York State	368,654	506	1.37

Source: New York State Department of Health. "Hospital-Acquired Infections, New York State 2011." September 2012.
http://www.health.ny.gov/statistics/facilities/hospital/hospital_acquired_infections/2011/docs/hospital_acquired_infection.pdf

- Of close to 92,000 central line days in upstate New York hospitals, there were 103 associated bloodstream infections (1.12 per 1,000 days) during 2011.
- The lowest infection rate was noted in Utica/Rome/North Country hospitals (.34 infections per 1,000 days), and the highest was in Western New York (1.52 infections per 1,000 days).
- The total of 368,654 central line days in hospitals statewide resulted in 506 infections during 2011, a rate of 1.37 infections per 1,000 days, which is higher than the rate in upstate New York (1.12 infections per 1,000 days).

Estimating the impact of all hospital-acquired infections in New York state

The table below shows the estimated impact of *all* hospital-acquired infections, including the number of infections and related deaths in New York state. These estimates apply national figures from the Centers for Disease Control and Prevention (a hospital-acquired infection rate of 4.5 percent and an associated mortality rate of 4.5 percent) to the number of hospital admissions in New York state during 2010. (For additional details, see "Data sources and methods" on page 14.)

Estimated number of hospital-acquired infections and related number of deaths: Upstate New York and New York state hospitals by region, 2010

	Estimated number of infections	Estimated number of deaths
Central New York	4,938	222
Finger Lakes	5,423	244
Southern Tier	2,445	110
Utica/Rome/North Country	3,557	160
Western New York	7,754	349
Upstate New York	24,117	1,085
New York State	108,050	4,862

Source: Centers for Medicare & Medicaid Services. "Cost Reports." May 3, 2012. Web. 26 Dec. 2012.
http://www.cms.gov/Research-Statistics-Data-and-Systems/Files-for-Order/CostReports/index.html?redirect=/CostReports/01_Overview.asp

- Considering all types of hospital-acquired infections, an estimated 108,000 infections occurred in hospitals statewide during 2010, including 24,000 infections in upstate New York hospitals.
- Hospital-acquired infections led to nearly 5,000 deaths statewide, including about 1,100 deaths in upstate New York.

Reducing hospital-acquired infections will improve care and reduce costs

The ability to detect and prevent hospital-acquired infections has improved with clinical surveillance systems that use sophisticated techniques to compile and analyze hospital data. These systems and methods enable hospitals to discern patterns and target areas for improvement.²⁴

The incremental costs associated with hospital-acquired infections were estimated by applying the range of costs associated with hospital-acquired infections, established by the Centers for Disease Control and Prevention through extensive literature review, to admissions and infection rates in New York state.

Estimated costs of hospital-acquired infections (in millions) in New York hospitals: Upstate New York and New York state by region, 2010

	Low cost estimate (millions 2011 \$)	High cost estimate (millions 2011 \$)
Central New York	\$70.5	\$137.1
Finger Lakes	\$77.4	\$150.6
Southern Tier	\$34.9	\$67.9
Utica/Rome/North Country	\$50.8	\$98.8
Western New York	\$110.7	\$215.3
Upstate New York	\$344.3	\$669.7
New York State	\$1.5 billion	\$3 billion

Sources:

Scott II, R.D. "The Direct Medical Costs of Healthcare-Associated Infections in U.S. Hospitals and the Benefits of Prevention." Division of Healthcare Quality Promotion, National Center for Preparedness, Detection, and Control of Infectious Diseases, Coordinating Center for Infectious Diseases, Centers for Disease Control and Prevention. March 2009.

http://www.cdc.gov/HAI/pdfs/hai/Scott_CostPaper.pdf

Centers for Medicare & Medicaid Services. "Cost Reports." May 3, 2012. Web. 26, Dec. 2012.

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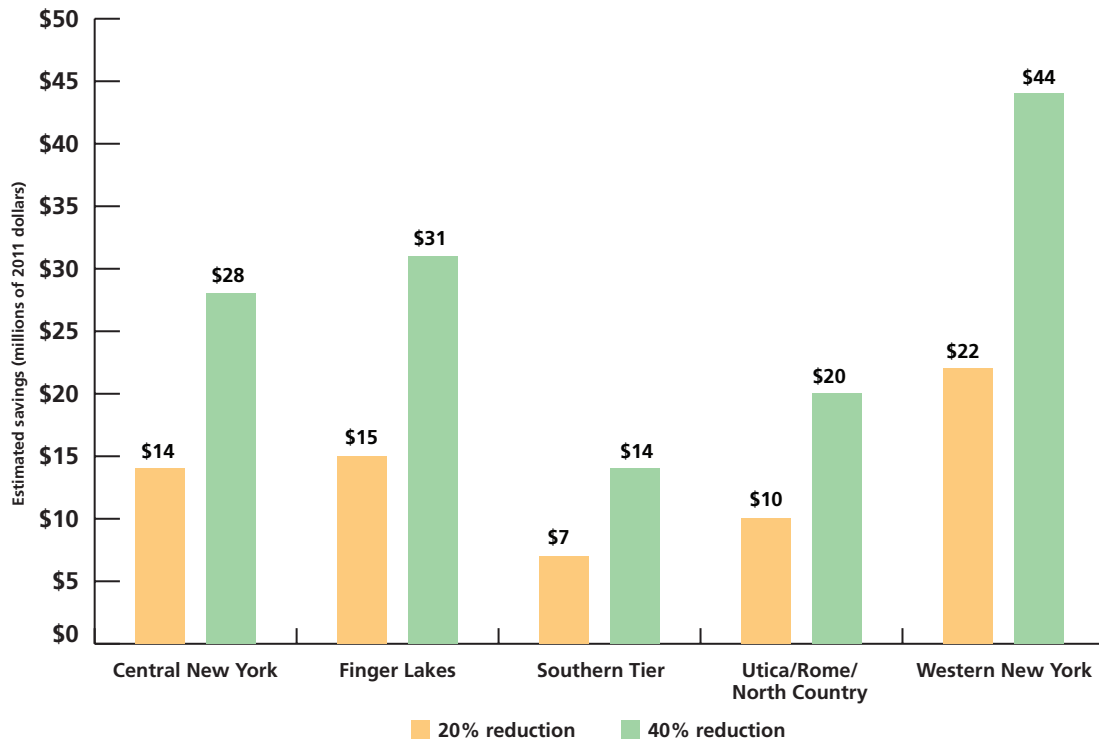
- In upstate New York, treating hospital-acquired infections added some \$344 million to \$670 million (2011 dollars) to hospital spending.
- Statewide, these incremental costs were in the estimated range of \$1.5 billion to \$3.0 billion (2011 dollars). (For more details, see "Data sources and methods" on page 14.)

Process improvements can reduce infection rates and raise quality of care, saving lives and money

According to the Centers for Disease Control and Prevention, infection control programs across the nation have resulted in highly variable infection rate reductions, ranging from 10 percent to 70 percent.²⁵

The potential impact of a conservative (20 percent) and a more ambitious (40 percent) reduction in upstate New York hospital infection rates is shown on page 11.

Estimated savings from partially reducing hospital-acquired infections: Upstate New York hospitals by region, 2010



Sources:

Scott II, R.D. "The Direct Medical Costs of Healthcare-Associated Infections in U.S. Hospitals and the Benefits of Prevention." Division of Healthcare Quality Promotion, National Center for Preparedness, Detection, and Control of Infectious Diseases, Coordinating Center for Infectious Diseases, Centers for Disease Control and Prevention. March 2009.
http://www.cdc.gov/HAI/pdfs/hai/Scott_CostPaper.pdf

Centers for Medicare & Medicaid Services. "Cost Reports." May 3, 2012. Web. 26 Dec. 2012.
http://www.cms.gov/Research-Statistics-Data-and-Systems/Files-for-Order/CostReports/index.html?redirect=/CostReports/01_Overview.asp

- Upstate New York hospitals could save an estimated \$68 million with a 20 percent reduction in hospital-acquired infection rates and an estimated \$137 million with a 40 percent reduction in rates.
- The estimated results of these infection rate reductions in upstate New York include 4,823 to 9,647 fewer infections and 217 to 434 fewer deaths each year with infection rate reductions of 20 percent and 40 percent, respectively (data not shown).
- Potential statewide savings ranging from \$309 million to \$617 million could result from similar reductions in hospital-acquired infection rates (data not shown).

National commitment needed to decrease hospital-acquired infection rates

The CDC joined several national professional associations in a “call to action” to eliminate hospital-acquired infections through collaborative efforts. The basis for this “call to action” is that: “Elimination will require the implementation of evidence-based practices, the alignment of financial incentives, the closing of knowledge gaps, and the acquisition of information to assess progress and to enable response to emerging threats.”²⁶

Federal government measures progress against five-year goals

The U.S. Department of Health and Human Services developed an action plan to reduce infection rates and encourage consistent application of recommended preventive practices. The surgical site and central line-associated bloodstream infections reported by New York state since 2007 and described in this report are among nine hospital-acquired infections monitored nationally.

The national goal is to achieve a 25 percent reduction in admission and readmission rates for surgical site infections by 2013. The Department of Health and Human Services reports being on target to achieve this goal, having seen a 2 percent reduction in 2009, followed by an 8 percent reduction in 2010. With a 15 percent reduction in central-line associated bloodstream infections in 2009, followed by a 32 percent reduction in 2010, HHS reports being on track to meet its goal of reducing by 50 percent this type of infection by 2013. HHS emphasizes that prevention efforts must be maintained to reach 2013 goals.²⁷

Federal reimbursement: A tool for reducing hospital-acquired infection rates

As a value-based purchaser, the federal government intends to “transform Medicare from a passive payer for services to a prudent purchaser of services, paying not just for quantity of services but for quality as well.”²⁸ The Deficit Reduction Act of 2005 required the Department of Health and Human Services to change Medicare’s payment system so that it discontinues making higher payments for conditions (including hospital-acquired conditions) that are designated as secondary diagnoses.²⁹

The government implemented payment penalties to discourage hospitals from incurring potentially avoidable costs.³⁰ Medicare’s penalties include disallowing billing for certain hospital-acquired infections.

The Patient Protection and Affordable Care Act of 2010 expanded the scope of federal activity in this arena. Investments provided through the ACA’s Prevention and Public Health Fund will be used to bolster states’ abilities to prevent health care-associated infections and fund expansion of state-based initiatives to measure, report and prevent hospital-acquired infections.³¹

As of July 2011, the Affordable Care Act prohibited federal payments to state Medicaid programs for medical assistance related to health care-acquired conditions and authorized states to identify other provider-preventable conditions for which federal payment to state Medicaid programs could be prohibited.³²

The 2009 American Recovery and Reinvestment Act provided \$40 million to help state health departments fight hospital-acquired infections.³³

Local public-private partnerships focus on reducing infection rates

In 2011, the federal government established the Partnership for Patients to convene major health care stakeholders in hospital care improvement. This effort targets a 40 percent reduction in hospital-acquired infection rates by the end of 2013. It involves a collaboration of the federal government with 26 Hospital Engagement Networks, including The Healthcare Association of New York State and the Greater New York Hospital Association.^{34,35}

Hospital and insurer partnerships in upstate New York

Rochester-based Excellus BlueCross BlueShield is working with upstate New York hospitals to drive improvement in quality of care and patient safety by linking payments to improvements in health outcomes.

Four areas are targeted for improvement:

- Clinical Outcomes – Focused on improvements in heart attack care, heart failure and pneumonia care
- Patient Safety – Focused on reductions in hospital-acquired infections, improved medication reconciliation processes, surgical care and National Quality Forum Safe Practices
- Patient Perception of Care and Patient Satisfaction – Focused on a hospital's use of a national survey tool
- Efficiency – Focused on generics utilization and readmissions

The health insurer evaluates participating hospitals on more than 300 performance measures. In 2012, hospitals achieved 87 percent of all target quality levels. Target outcomes are jointly agreed upon by each hospital and the health insurer using benchmarks established by the Centers for Medicare & Medicaid Services, the Leapfrog Group, the Joint Commission on the Accreditation of Healthcare Organizations, the Institute for Healthcare Improvement and others.

For 2012, 54 upstate New York hospitals and health centers earned \$26 million in quality improvement incentive payments from the health insurer. In the past nine years, quality performance incentives from Excellus BCBS have exceeded \$145 million.

Data Sources and Methods

New York state surgical site infections and central line-associated bloodstream infections: New York State Department of Health

New York state requires hospitals that perform colon surgery, coronary artery bypass graft surgery, hip replacement/revision surgery and have intensive care units to use the CDC's National Healthcare Safety Network to report hospital-acquired infections.³⁶

Hospital infections in New York state hospitals: Centers for Medicare & Medicaid Services

The estimated rate of all hospital-acquired infections in New York state was derived from the Centers for Medicare & Medicaid Services' 2010 annual cost report, which includes total and Medicare utilization, as submitted by Medicare-certified institutional providers. The Centers for Medicare & Medicaid Services aims to provide current data that are comprehensive and accurate. This report reflects data submitted to the Healthcare Cost Report Information System by Medicare fiscal intermediaries.³⁷

Hospital-acquired infection rate: Centers for Disease Control and Prevention

The Centers for Disease Control and Prevention estimates that 4.5 hospital-acquired infections occur per 100 hospital admissions.³⁸ It bases this estimate on analysis by the Healthcare Infection Control Practices Advisory Committee, a federal advisory committee that also provides advice and guidance to the Department of Health and Human Services.³⁹

Hospitals in each region

As shown below, hospital results were grouped according to the regions shown.

Central New York Region		
Auburn Community Hospital Canton-Potsdam Hospital Carthage Area Hospital Cayuga Medical Center Claxton-Hepburn Medical Center Clifton-Fine Hospital	Cortland Regional Medical Center Crouse Hospital E.J. Noble Hospital Lewis County General Hospital Massena Memorial Hospital	Oswego Hospital River Hospital Samaritan Medical Center St. Joseph's Hospital Health Center Upstate University Health System
Finger Lakes Region		
Clifton Springs Hospital & Clinic F.F. Thompson Hospital Geneva General Hospital Highland Hospital	Lakeside Memorial Hospital Newark-Wayne Community Hospital Noyes Memorial Hospital Rochester General Hospital	Soldiers & Sailors Memorial Hospital Strong Memorial Hospital Unity Hospital
Southern Tier Region		
Arnot Ogden Medical Center Corning Hospital Ira Davenport Memorial Hospital	Lourdes Hospital Schuyler Hospital St. James Mercy Hospital	St. Joseph's Hospital United Health Services Hospital System
Utica/Rome/North Country Region		
Adirondack Medical Center Alice Hyde Medical Center A.O. Fox Hospital Bassett Hospital of Schoharie Bassett Medical Center Champlain Valley Physicians Hospital	Community Memorial Hospital Elizabethtown Community Hospital Faxton St. Luke's Healthcare Little Falls Hospital Margaretville Hospital Moses Ludington Hospital	Nathan Littauer Hospital O'Connor Hospital Oneida Healthcare Rome Memorial Hospital St. Elizabeth Medical Center St. Mary's Hospital
Western New York Region		
Bertrand Chaffee Hospital Brooks Memorial Hospital Cuba Memorial Hospital Eastern Niagara Health System Erie County Medical Center Jones Memorial Hospital Kaleida Health System Kenmore Mercy Hospital	Mercy Hospital of Buffalo Mount St. Mary's Hospital Niagara Falls Memorial Medical Center Olean General Hospital Roswell Park Cancer Institute Sisters of Charity Hospital/ St. Joseph Campus	TLC Lakeshore United Memorial Medical Center WCA Hospital Westfield Memorial Hospital Women & Children's Hospital of Buffalo Wyoming County Community Health System

Data Sources and Methods (continued)

Death rate from hospital-acquired infections: Centers for Medicare & Medicaid Services

The Centers for Medicare & Medicaid Services estimates that annually, 90,000 deaths result from up to 2 million hospital-acquired infections, yielding an infection-associated mortality rate estimate of 4.5 percent.⁴⁰

Cost analysis methodology

Estimates published by the Centers for Disease Control and Prevention provided the base range of estimated costs – thereby allowing calculation of potential savings from hospital-acquired infection reduction in upstate New York and New York state.⁴¹

Consistent with Centers for Disease Control and Prevention methodology, two distinct consumer price indices were applied to the base range to determine a range of inflation-adjusted (2011) base estimates. One index reflects total urban consumer inflation, which may understate hospital resource use to treat hospital-acquired infections. The second index accounts for inpatient medical care cost inflation, providing less conservative cost estimates.⁴²

Applying each index resulted in two distinct cost ranges, a conservative range based on total urban consumer inflation, and a higher range based on inpatient hospital services inflation.

In this report, the potential range of the direct costs of hospital-acquired infections was defined to include the lowest estimate derived from the urban consumer price index adjustment and the highest estimate derived from the adjustment for inpatient hospital care inflation.⁴³

Finally, each cost estimate range was refined to reflect average medical expenses in upstate New York and separately, those statewide.⁴⁴

The table below summarizes the methodology for calculating cost ranges per patient for hospital-acquired infections.

Cost methodology summary: Calculation of attributable per-patient costs of all hospital-acquired infections

Base and summary of costs adjustment ^a	Low cost estimate (all urban consumer price index-adjusted range)	High cost estimate (hospital inpatient services index-adjusted range)
Base estimate range (adjusted to 2007 Consumer Price Index) ^b	\$16,359	\$25,903
2011 inflation adjustment factor (Low=1.043 High=1.243) ^c	\$17,582	\$34,197
New York state medical expense adjustment factor (1.147) ^d	\$20,160	\$39,211
Upstate New York medical adjustment factor (.812) ^d	\$14,278	\$27,771
Aggregate national (2007) CDC estimates (billions) ^b	\$28.4	\$45.0
Aggregate national (2007) CDC estimates (billions), 2011 inflation adjustment factor (Low=1.075 High=1.320) ^c	\$30.5	\$59.4

^a Calculations assume 4.5 infections per 100 admissions. Centers for Medicare & Medicaid Services. "Cost Reports" Web. 26 Dec. 2012. http://www.cms.gov/Research-Statistics-Data-and-Systems/Files-for-Order/CostReports/index.html?redirect=/CostReports/01_Overview.asp

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