Connecticut Central Line Associated Bloodstream (CLABSI) Infection Rates

Hospitalized patients, especially those who are critically ill, often require the placement of a medical device called a "central line" or "central venous catheter" to deliver fluids, medications, blood or nutrition directly into patients' large veins usually in the neck, chest, arm or groin. Placement of a central line can sometimes cause an infection called a Central Line Associated Bloodstream Infection (CLA-BSI). There are nationally recognized best practices to follow to minimize the risk of an infection developing from a central line. [link to SHEA/APIC/CDC fact sheet] Connecticut hospitals have been working in collaboration with the Department of Public Health, the Connecticut Hospital Association and Qualidigm to implement and follow these central line best practices to ensure the highest quality of care for patients in Connecticut hospitals.

All Connecticut acute care hospitals are required to monitor and report CLA-BSIs identified in patients receiving treatment in Intensive Care Units (ICU). These infections are identified and reported using standard definitions and methods as outlined by the Centers for Disease Control and Prevention (CDC). While the goal is always to have no infections (a rate of 0), not all CLA-BSIs can be prevented even when all best practices are followed.

The CDC reports CLA-BSI data by hospital type (teaching affiliation, size) and ICU type (medical, pediatric, medical-surgical, etc.) as ICUs are not all the same or care for the same type of patients. The CLA-BSI rates shown below use the Standardized Infection Ratio or "SIR" which allows for comparison of similar hospital and ICU types. The SIR measures how a single hospital's rate of infection compares to a "gold standard". In this case, the gold standard is the national rates reported by the CDC. The SIR compares the actual number of infections at each hospital to an expected number of infections based on hospitals and ICUs of the same type (bed size, teaching status, etc and type of ICU: medical, surgical, medical-surgical, etc.). An SIR of 1 indicates that a hospital's CLA-BSI rate is the same as the national average for that type of ICU. If a hospital has more or less infections than expected, statistical testing is performed to determine if that difference is meaningful (meaning the difference is due to more than random chance).

There are three categories that describe how a Connecticut hospital compares to the national averages using the SIR:
- The hospital can be "**In the Expected Range**", meaning their CLA-BSI rate is not significantly different than the national average.
- The hospital can be "**Better than Expected** ", meaning their CLA-BSI rate is significantly lower than the national average.
- The hospital can be "**Worse than Expected"**, meaning their CLA-BSI rate is significantly higher than the national average.

Results are presented for each type of ICU. There are many different types of ICUs, each with different types of patients. Patients requiring intensive care are usually sicker, require complex treatment and are at the highest risk for Healthcare Associated Infection (HAI). Each type of ICU differs in how frequently it uses central lines, which contributes to risk for infection; greater use of central lines means more opportunity for infections to occur in that ICU.

Keep in mind that a hospital's infection rate is just one factor to consider when choosing where to get your care. You are encouraged to discuss this information with your physician. The advice of your physician, the hospital's and specialist's experience with the type of care you need, and other factors unique to your situation should be considered as well. Be careful when drawing conclusions from this information. Small numbers of patients may distort reported performance.

CT SIR CLABSI Rates by Hospital ICU type and Teaching Status

HOSPITAL	CL Days	OBS	EXP	SIR	INTERPRETATION
CT Central Line Associated Bloodstream (CLABSI) Infection Rates in COMBINED MEDICAL/SURGICAL ICU – Major Teaching Hospitals September 1, 2009 through December 31, 2009					
Lower volume ICUs					
Hospital A	232	0	0.3	0	In the expected range
Hospital C	604	8	0.99	9	Worse than expected
Hospital E	355	3	0.8	3.6	In the expected range
Hospital G	107	0	0.3	0	In the expected range
Moderate volume ICUs					
Hospital B	4736	2	11	0.2	Better than expected
Hospital D	1446	3	2.1	1.4	In the expected range
Higher volume ICUs					
Hospital F	14149	34	31	1.1	In the expected range
Hospital H	3239	7	7.4	1	In the expected range

**CT Central Line Associated Bloodstream (CLABSI) Infection Rates
in COMBINED MEDICAL/SURGICAL ICU – All other Hospitals
September 1, 2009 through December 31, 2009**

HOSPITAL	CL Days	OBS	EXP	SIR	INTERPRETATION
Hospital I					
Hospital J					
Hospital K					
Hospital L					
Hospital M					
Hospital N					
Hospital O					
Hospital P					
Hospital Q					
Hospital R					
Hospital S					
Hospital T					
Hospital U					

**CT Central Line Associated Bloodstream (CLABSI) Infection Rates
in MEDICAL ICU – Major Teaching Hospitals
September 1, 2009 through December 31, 2009**

HOSPITAL	CL Days	OBS	EXP	SIR	INTERPRETATION
Hospital V					
Hospital W					
Hospital X					
Hospital Y					

**CT Central Line Associated Bloodstream (CLABSI) Infection Rates
in MEDICAL ICU – All other hospitals
September 1, 2009 through December 31, 2009**

HOSPITAL	CL Days	OBS	EXP	SIR	INTERPRETATION
Hospital Z					
Hospital ZZ					

**CT Central Line Associated Bloodstream (CLABSI) Infection Rates
in PEDIATRIC: COMBINED MEDICAL/SURGICAL ICU
September 1, 2009 through December 31, 2009**

HOSPITAL	CL Days	OBS	EXP	SIR	INTERPRETATION
Hospital AA					
Hospital BB					
Hospital CC					

NOTES:

CL = Central Line Days (sometimes referred to as "Device Days")
These are the number of patients with one or more central lines of any type in an ICU. The numbers are collected daily, at the same time each day, during the month. The number of CL days is the denominator for calculating the Central Line Associated Blood Stream infection rate (CLABSI) and the number of central line related blood stream infections for the same period of time is the numerator. The number of central lines days reflects 1) the number of patients with central lines, 2) how long central lines are used or 3) a combination of both the number of patients with central lines and how long they are used for. ICUs with more patients and/or sicker patients generally have a larger number of central line days than smaller ICUs and/or ICUs with less sick patients
OBS = Observed (or actual) number of CLA-BSI.

EXP = Expected (or predicted) number of CLA-BSI. This is calculated from the CDC (NSHN [National Healthcare Safety Network) average infection rate for that specific ICU type and the hospital ICU's number of central line days.

Interpretation:
- In the expected range = not significantly different from the CDC (NHSN) average
- Better than expected = significantly lower than the CDC (NHSN) average
- Worse than expected = significantly higher than the CDC (NHSN) average

Standardized Infection Ratio (SIR) = $\dfrac{\text{Observed (Actual) Number of Events}}{\text{Expected (Predicted) Number of Events}}$