
Public Reports of Hospital Infections

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Chief

Healthcare Associated Infection (HAI) Program

Healthcare Associated Infections (HAI) Program Overview

- Legislative mandates
 - SB 739, Speier (2006)
 - SB 1058, Alquist (2008)
 - SB 158, Flores (2008)
- Apply to licensed general acute care hospitals

Legislative mandates for CDPH

- HAI surveillance and prevention program
 - Mandatory reporting
 - Infection prevention recommendations
 - Outbreak management
- Appoint HAI Advisory Committee
 - Recommendations for prevention, surveillance and reporting of HAIs

Reporting mandates for hospitals

- Prevention measures (January 1, 2008 – SB 739)
 1. Influenza vaccination of healthcare personnel Central line insertion practices (CLIP)
 2. Surgical antimicrobial prophylaxis
- HAIs (January 1, 2009 – SB 1058)
 1. Central line Associated Bloodstream Infections (CLABSI)
 2. *Clostridium difficile* Infections (CDI)
 3. Methicillin Resistant *Staphylococcus aureus* (MRSA) Bloodstream Infections (BSI)
 4. Vancomycin Resistant *Enterococci* (VRE) BSI
 5. Surgical Site Infections (SSI) following orthopedic, cardiac and gastrointestinal operative procedures

Methods of reporting

- By January 1, 2011 – CDPH to develop or utilize an existing electronic reporting system
 - January 2008-April 2010 –hospitals reported on paper forms
 - April 1, 2010 - hospitals directed to use NHSN for reporting CLABSI, CDI and BSIs
 - April 1, 2011 –hospitals to report at least two SSIs via NHSN

NHSN: National Healthcare Safety Network

(secure electronic surveillance and reporting system maintained by CDC)

Year one public reports -2010

1. Influenza Vaccination Among Employees In California General Acute Care Hospitals
2008-2009 Respiratory Season (released 9/30/10)
2009-2010 Respiratory Season. (released 12/29/10)
2. Healthcare-Associated Bloodstream Infections In California Hospitals, January 2009 through March 2010 (released 12/30/10)
3. Healthcare-Associated *Clostridium difficile* Infections in California Hospitals, January 2009 through March 2010 (released 12/30/10)

Year two public reports -2011

1. Influenza Vaccination Among Health Care Personnel For The 2010-2011 Respiratory Season (released 12/5/11)
2. Central Line Insertion Practice Adherence in Intensive Care Units: 1/1/09 - 3/31/10
3. Healthcare-Associated MRSA/VRE Bloodstream: 4/1/10 – 3/31/11
4. Central Line Associated Bloodstream Infections: 4/1/10 – 3/31/11
5. Healthcare-Associated *Clostridium difficile* infections: 4/1/10 – 3/31/11
6. Surgical Site Infections

Public reporting

- To improve quality, reduce costs
 - Hospitals = identify areas for improvement
 - Purchasers = determine value of care
 - Patients = informed choices
- Convey scientific meaning in a manner that is useful and interpretable to a diverse audience

Adjustment for underlying infection risk

1. Stratification - Assign hospitals to groups based on similar infection risk
2. Adjustment - Mathematically adjust rates based on individual patient infection risks

HAI reports -2011

- Presentation
 - Surgical Site Infections (SSI)
 - Central Line Associated Blood Stream (CLABSI)

Surgical Site Infections (SSI)

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SSI reporting timeline and publications

- January 2009 – March 2011
 - Based on paper forms for 9 quarters
 - Infection rates not risk adjusted
- April 2011 forward
 - Via CDC National Healthcare Safety Network (NHSN)
 - Infection rate risk adjusted as mandated
- Pending data publication
 - Report of 2009-2011 paper form-based data
 - Web-based publication of NHSN reported data

Background - SSI

- SSI is an infection following a surgical procedure
 - Classifications
 - ✓ Superficial
 - ✓ Deep
 - ✓ Organ/space
 - Reportable if it occurs within one month of surgery
 - ✓ Or within one year for surgical implants

Background - SSI

- Public reporting mandate
 - SSIs following:
 - ✓ Cardiac
 - ✓ Orthopedic
 - ✓ Gastrointestinal (GI) surgical procedures
 - Risk adjustment to be by NHSN methods

Report: paper form-based data

- Hospitals submitted SSI data on paper forms
 - Following surgeries January 2009 - March 2011
 - Three categories of surgical procedures
 - ✓ Cardiac
 - ✓ Gastrointestinal
 - ✓ Orthopedic
- Surgical procedures not defined or standardized
 - No risk adjustment possible

Table 1. Total Inpatient Surgeries and Associated Surgical Site Infections for Three Hospital-defined Categories of Surgical Procedures (Cardiac, Gastrointestinal, Orthopedic) , January 2009 - March 2011.

- *Generated an infection rate for each hospital for each surgical category*
- *Unable to risk adjust or compare infection rates between hospitals*

REPORTING HOSPITAL FACILITY ¹	CARDIAC ²				GASTROINTESTINAL ²				ORTHOPEDIC ²			
	SSI Events	Total Procedures	Crude SSI Rate ³	Crude Rate Confidence Interval ⁴	SSI Events	Total Procedures	Crude SSI Rate ³	Crude Rate Confidence Interval ⁴	SSI Events	Total Procedures	Crude SSI Rate ³	Crude Rate Confidence Interval ⁴

Web-based presentation of NHSN reported data

- Reporting through NHSN starting in April 2011
- Allows risk adjustment through the Standardized Infection Ratio (SIR)
 - Based on individual patient risks adjusted for patient health and surgery
 - Compares procedure-specific rate to a national average
 - Is calculated when there is sufficient volume of surgical procedures to generate an SIR

Web-based presentation of NHSN reported data

The top four surgical procedures with an SIR were selected:

- Coronary artery bypass graft (CBGB)
- Hip replacement (HPRO)
- Colon surgery (COLO)
- Knee replacement (KPRO)

Procedure Code	Number of SIR
CBGB	5
HPRO	18
COLO	29
KPRO	5
Total	57 (for 48 hospitals)

Web-based presentation of NHSN reported data

- In collaboration with and supported by California HealthCare Foundation



- 48 hospitals with a total of 57 SIRs are published
 - None significantly different than predicted

Choose a Procedure:

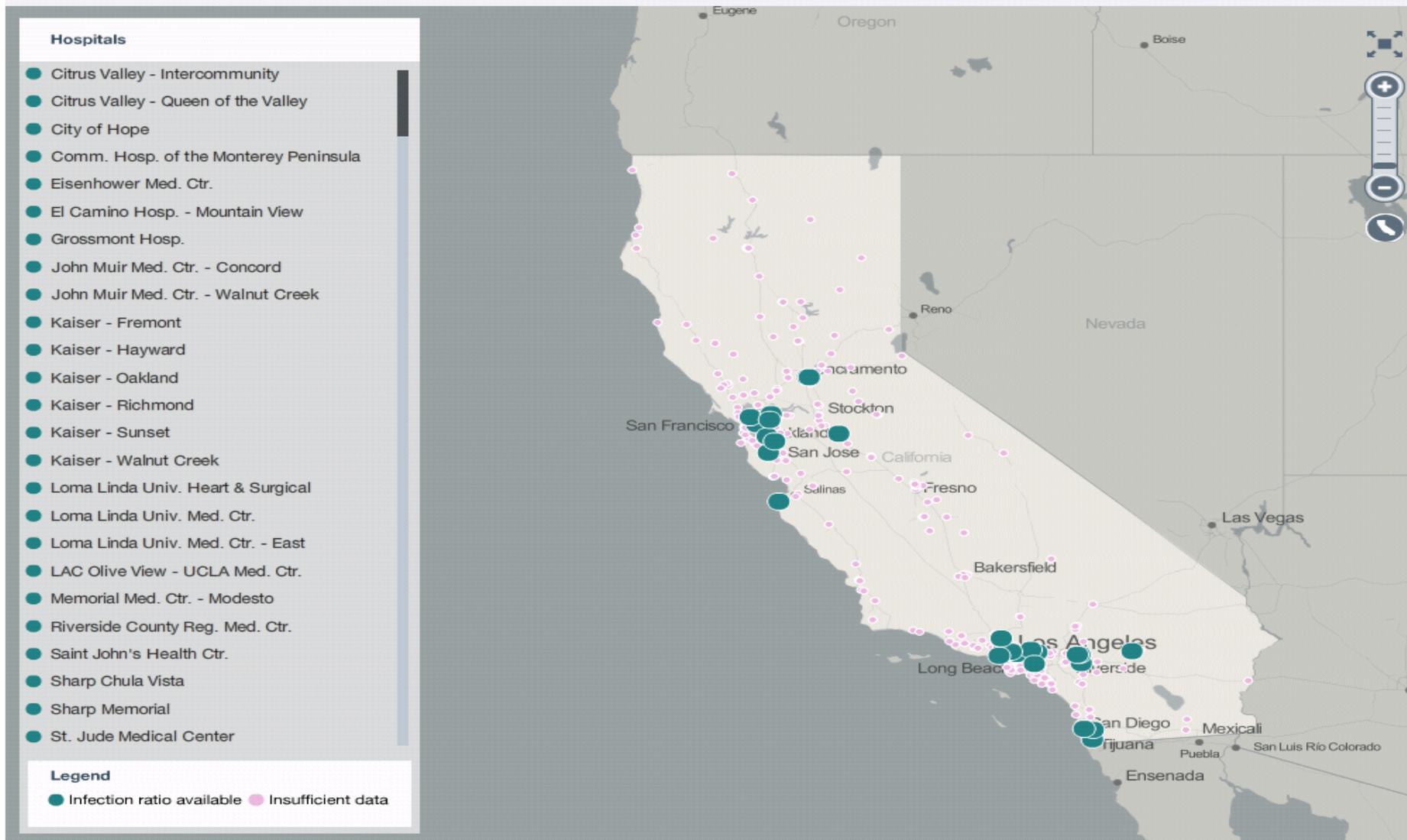
Colon Surgery

Coronary Artery Bypass Graft

Hip Replacement

Knee Replacement

A surgical procedure to the large intestine, located in the lower part of your digestive tract.



Choose a Procedure:

Colon Surgery

Coronary Artery Bypass Graft

Hip Replacement

Knee Replacement

A surgical procedure to the large intestine, located in the lower part of your digestive tract.

Hospitals

- Citrus Valley - Intercommunity
- Citrus Valley - Queen of the Valley
- City of Hope
- Comm. Hosp. of the Monterey Peninsula
- Eisenhower Med. Ctr.
- El Camino Hosp. - Mountain View
- Grossmont Hosp.
- John Muir Med. Ctr. - Concord
- John Muir Med. Ctr. - Walnut Creek
- Kaiser - Fremont
- Kaiser - Hayward
- Kaiser - Oakland
- Kaiser - Richmond
- Kaiser - Sunset
- Kaiser - Walnut Creek
- Loma Linda Univ. Heart & Surgical
- Loma Linda Univ. Med. Ctr.
- Loma Linda Univ. Med. Ctr. - East

Legend

- Infection ratio available
- Insufficient data

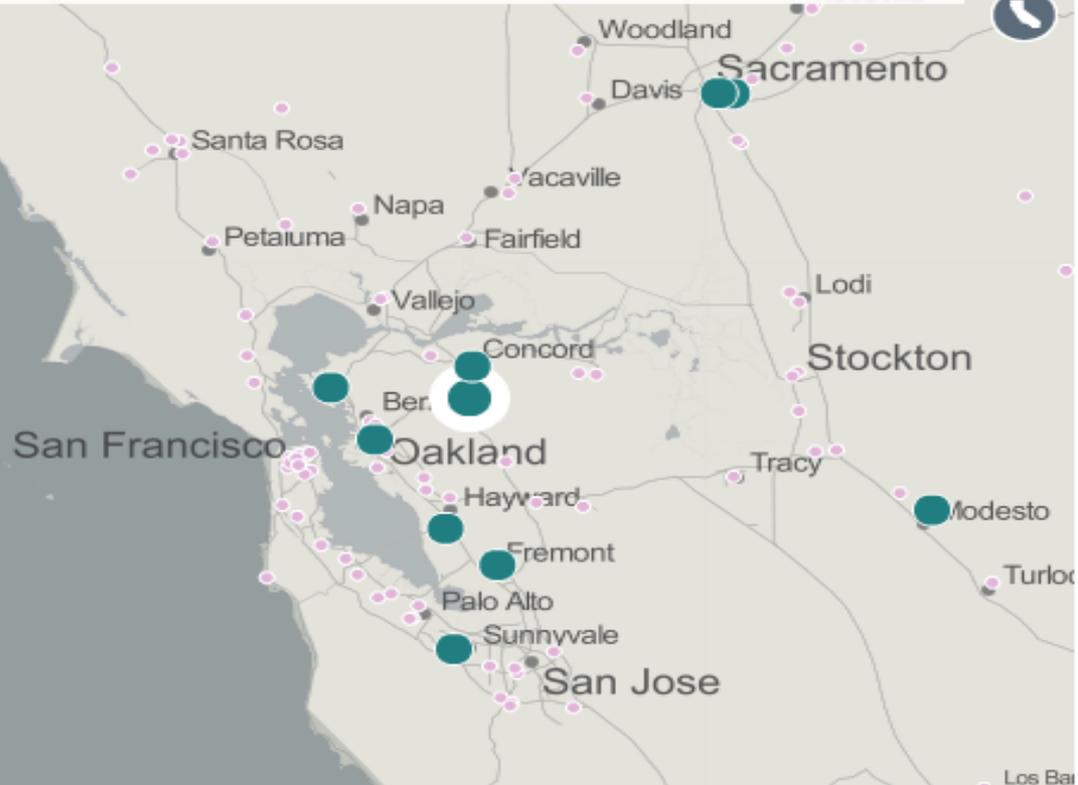
John Muir Medical Center - Walnut Creek Campus

Colon Surgery

Procedures: 50 Infections: 4

Standardized Infection Ratio (SIR): **Within the predicted range for this hospital's patient population.***

*Scroll down to KEY TERMS for more information about the SIR

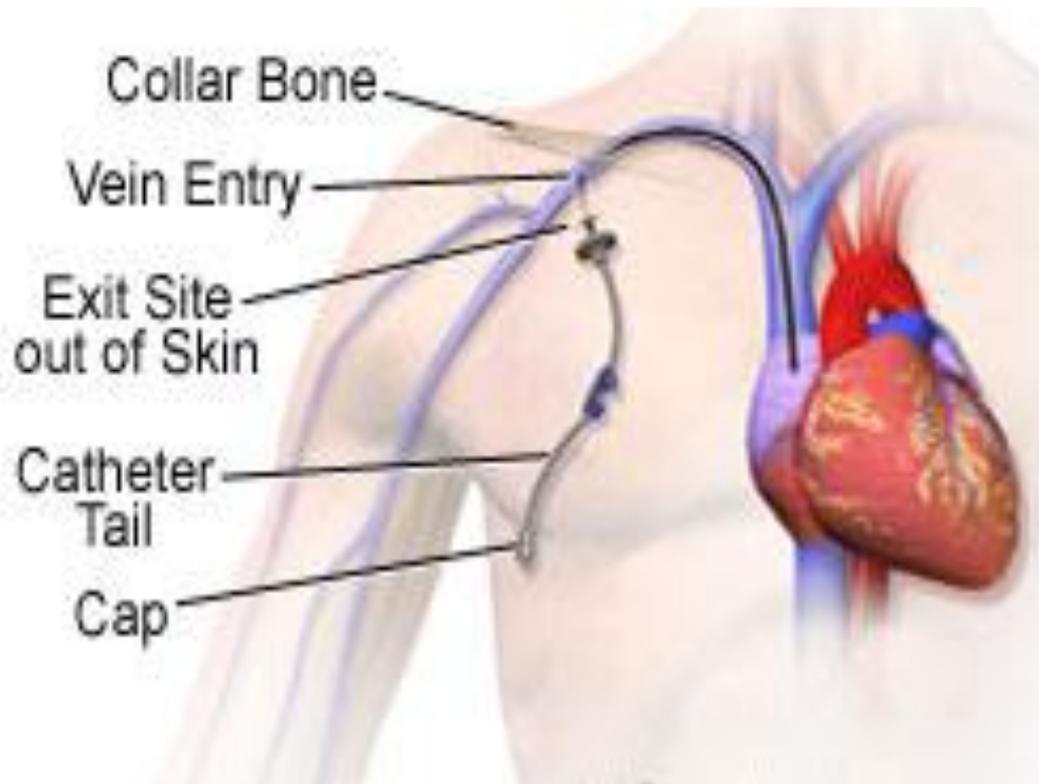


SSI reporting – next steps

- Next data publication: July 2012
 - April 1 – December 31, 2011
 - More SIRs and more operative procedures
- Current Reporting
 - 95% of hospitals are reporting SSI data through NHSN as of December 13, 2011

Central line associated bloodstream infections (CLABSI)

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- A central line is an intravenous catheter
- CLABSI: a bloodstream infection in a patient with a central line and no other explanation for the infection

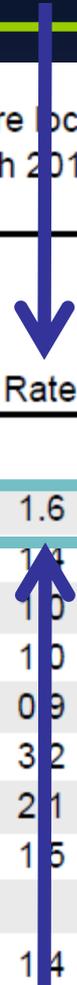
What's new in the CLABSI report?

- First CDPH CLABSI report to use data via NHSN
- First ever CDPH presentation of CLABSI rates at the level of care (e.g. ICU, medical/surgical, etc)
- First ever presentation of calculated California standards against which hospitals are compared

California average CLABSI rates

Table 1. California central-line associated bloodstream infection (CLABSI) benchmarks by patient care locations: Pool and distribution of hospital-specific CLABSI rates, reported by California hospitals, April 2010 - March 2011 (inclusive)

Patient care location	Hospitals reporting	Cases	Central line days	Patient days	Rate	Device Utilization Ratio
<u>Critical care areas</u>						
Medical Critical Care - Major Teaching	16	108	67886	125032	1.6	0.54
Medical/Surgical Critical Care - Major Teaching	11	63	46218	75579	1.1	0.61
Medical Critical Care - All Others	57	120	119454	250001	1.0	0.48
Medical/Surgical Critical Care - All Others	240	472	491229	951204	1.0	0.52
Surgical Critical Care	53	142	161363	264324	0.9	0.61
Burn Critical Care	12	35	10940	26850	3.2	0.41
Trauma Critical Care	12	52	24345	54230	2.1	0.45
Pediatric Critical Care	35	154	99383	193457	1.5	0.51
Neonatal Critical Care						
<= 750 GRAMS	98	44	31353	72835	1.4	0.43
751-1000 GM	110	49	30558	80364	1.6	0.38



Example

Reporting Hospital*	Medical - Major teaching	Medical/surgical - Major teaching	Medical - all others	Medical/surgical - all others	Surgical	Burn	Trauma	Pediatric	Neonates ≤ 750 grms	Neonates 751 - 1000 grms	Neonates 1001 - 1500 grms	Neonates 1501 - 2500 grms	Neonates > 2500 grms	Step down - adult	Step down - neonatal	Step down - pediatric	Medical	Medical/surgical	Surgical
ARROWHEAD RGN MED CTR, COLTON	●				⊙	⊙			⊙	⊙	⊙	⊙	—				●	⊙	⊙

Table 3. Rates of central line-associated bloodstream infections among patients providing medical critical care, reported by California major teaching hospitals, April 2010 - March 2011 (inclusive)

Reporting hospital*	Cases	Central line-days	Patient days	Device utilization ratio	Rate	95% Confidence Interval	Statistical interpretation**	
							CA	US
STATE OF CALIFORNIA POOLED DATA	108	67886	125032	0.54	1.6			
ARROWHEAD RGN MED CTR, COLTON	9	2372	5293	0.45	3.8	(1.7, 7.2)	●	⊙
CEDARS-SINAI MED CTR, LOS ANGELES	4	6579	12358	0.53	0.6	(0.2, 1.6)	⊙	⊙
LAC+USC MED CTR, LOS ANGELES	6	7594	17633	0.43	0.8	(0.3, 1.7)	⊙	○
LAC/HARBOR-UCLA MED CTR, TORRANCE	11	2262	4827	0.47	4.9	(2.4, 8.7)	●	⊙
† LOMA LINDA UNIVERSITY MED CTR	35	11685	20052	0.58	3.0	(2.1, 4.2)	●	⊙
LOMA LINDA UNIV HEART & SURGICAL	-	-	-	-	-			
LOMA LINDA UNIV MED CTR EAST HAVEN	-	-	-	-	-			
LOMA LINDA UNIV MED CTR, LOMA LINDA	-	-	-	-	-			

- Statistical comparisons are made to both California and US average rates
- US average rate comparisons are only made if there are comparable published US rates

Key findings

- Patient care locations with predominantly low rates
 - The majority of neonatal critical care and general pediatric care locations reported no CLABSI
- Hospital participation increased from 79% to 97%
- Provides information for hospitals to target prevention efforts to specific patient care locations

Next data publication: July 2012

Year 2012 HAI Reports

- Next date of publication July 2012
 - In order to shift to calendar year reporting (January – December 2011)

Questions?