## Healthcare-Associated Infections in Hawaii

## 2012 Report



HAI Elimination

September 30, 2013

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## Table of Contents:

Introduction	Page. 4
Methods	Page. 5
Instructions for reading the graphs and tables	Page. 6
Central Line-Associated Bloodstream Infections (CLABSI) Reporting	Page. 7
CLABSI Graph	Page. 8
CLABSI Table	Page. 9
Catheter Associated Urinary Tract Infections (CAUTI) Reporting	Page. 10
CAUTI Graph	Page. 11
CAUTI Table	Page. 12
Colon Surgery – Surgical Site Infections (SSI) Reporting	Page. 13
Colon Surgery – SSI Graph	Page. 14
Colon Surgery – SSI Table	Page. 15
Abdominal Hysterectomy – SSI Reporting	Page. 16
Abdominal Hysterectomy – SSI Graph	Page. 17
Abdominal Hysterectomy – SSI Table	Page. 18
Hospital Summary Table	Page. 19
Acknowledgements	Page. 20
HAI Advisory Committee	Page. 21

#### Introduction:

Healthcare-associated infections (HAIs) have decreased dramatically in hospitals across the nation including Hawaii. New technologies, more teamwork and a reliance on evidence-based practices have had a significant impact on safety and quality of care. Just 10 years ago, HAIs were thought to be an unavoidable risk of being hospitalized. Today many intensive-care units and other inpatient wards are reporting 6-, 12-, even 24 months straight without a single case of hospital-borne bloodstream, urinary tract, or pneumonia infections.

HAIs are infections that are associated with receiving treatment in a healthcare setting. For each type of infection affecting a patient in a healthcare setting, specific criteria are used to determine whether the infection is an HAI or not. For example, if a blood stream infection develops in a patient on or after the third hospital day (day of admission is day one), the infection is considered an HAI. Blood stream infections that occur within the first two hospital days are considered to be community-acquired infections and were picked up in the community before admission to the hospital.

The following report includes information about HAIs among patients who received treatment requiring specific types of devices or procedures in Hawaii's acute care facilities. In 2011, the Hawaii legislature passed HRS §325-2.5, relating to HAI reporting (<u>Click her to view the bill</u>). Healthcare facilities have granted the Hawaii Department of Health (HDOH) access to HAI data reported to the <u>National Healthcare Safety Network (NHSN)</u> under the Centers for Medicare and Medicaid Services (CMS) rules.

The statute also instructs HDOH to prepare public reports of Hawaii HAI rates using methodology developed by the Centers for Disease Control and Prevention (CDC) and CMS. This report contains data for conditions that were mandated by CMS for the Inpatient Quality Reporting (IQR) program for calendar year 2012 and includes all Central Line-Associated Bloodstream Infections (CLABSI) and Catheter-Associated Urinary Tract Infections (CAUTI) in intensive care units (ICU) as well as all inpatient surgical site infections (SSI) for Abdominal Hysterectomy (HYST) and Colon Surgeries (COLO).

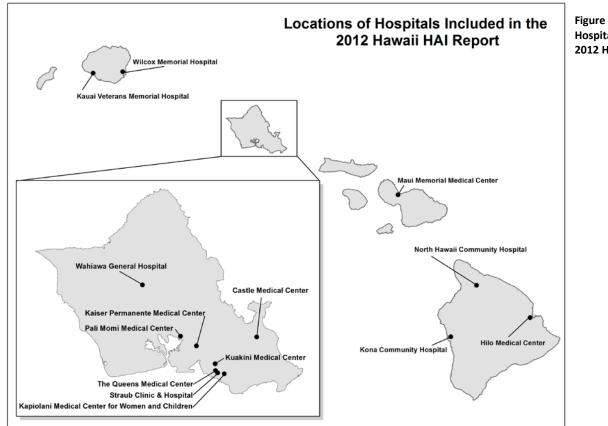


Figure 1: Locations of Hospitals Included in the 2012 Hawaii HAI Report Figure 1 shows the location of each hospital included in this report. Hospitals not part of the CMS IQR program were excluded, including: Hale Hoola Hamakua, Kahuku Medical Center, Kau Hospital, Kohala Hospital, Kula Hospital, Lanai Community Hospital, Leahi Hospital, Maluhia, Molokai General Hospital, Rehab Hospital of the Pacific, Samuel Mahelona Memorial Hospital and Tripler Army Medical Center. Kapolani Medical Center for Women & Children, Kauai Veterans Memorial Hospital and Shriners Hospital for Children also fall into this category, but have voluntarily shared their data with us.

The information in the report is consistent with HAI data published in <u>CDC reports</u> and on the CMS website: <u>Hospital Compare</u>. However, the data may not agree with the Hospital Compare website because CMS locks its data on a quarterly basis; it does not allow facilities to make corrections or update data once the submission period has ended.

According to the CDC's 2011 National and State HAI report, Hawaii had the second best overall comparison rate for CLABSI in the nation. Specifically for ICU locations, Hawaii was the best in the nation (<u>Click here to view the report</u>).

A Hospital's reported infection rate is only one of many possible factors to consider when choosing where to receive care. The results from this report may be a factor when patients consider where to receive care, but equally or more important to consider may be the advice of physicians, the hospital's and specialist's experience with the care that is needed, and other factors unique to the patient's situation.

#### **Methods:**

HDOH utilizes the CDC's NHSN system for HAI reporting. NHSN is a free, secure web-based surveillance system developed by the CDC, and used by over 11,000 healthcare facilities in the nation. NHSN has data collection modules that cover a wide variety of HAIs, from all types of healthcare organizations. The data is risk-adjusted and aggregated with standardized numerator and denominator definitions to allow for comparison and trending across facility types.

The four CMS mandated HAIs are presented using a standardized infection ratio (SIR). The SIR is a summary measure that compares the number of infections associated with the number of device days (CLABSI & CAUTI) or procedures (SSI) in a facility to national data. The national data includes all hospitals in the U.S. reporting data to the CDC's NHSN database.

The SIR accounts for some risk factors that could increase or decrease a patient's risk of infection. This adjustment for differences in risk allows for reasonable comparisons among hospitals, regardless of patient characteristics. The findings in this report are based on the assumption that patients at Hawaii hospitals are similar to all patients in the NHSN database.

The SIR is a ratio that describes a hospital's infection numbers compared to a predicted number using national data. Since the NHSN database does not contain data for infection type in the U.S. there is a level of uncertainty associated with the estimated SIR. This uncertainty is represented by a "95% confidence interval (CI)" (presented as an error bar). A CI of 95% can be interpreted as follows: If the procedure for calculating the SIR were repeated for different groups of patients who a device or procedure, the true SIR would fall within that range 95% of the time. CIs provide a simple way to determine statistical significance. If one SIR lies outside the 95% CI of another SIR, there would be a significant difference between the two SIRs. (<u>Click here for technical guide on the SIR</u>).

#### Instructions for reading the graphs and tables:

Since the SIR is an estimate, the graphs included in this report also display the CI using an error bar. A CI is a measure of reliability (in this case with 95% certainty) of an estimate (such as the SIR). For hospitals with smaller volumes, the error bar will be wider.

The closer the SIR is to 1.0, the closer the actual number of infections was to the predicted number of infections for a given hospital. A SIR greater than 1.0 indicates more HAIs were observed than predicted; conversely, a SIR less than 1.0 indicates fewer HAIs were observed than predicted. A SIR of 0 means the hospital had no infections during the time period. The SIR can only be calculated if the number of predicted infections for the hospital is greater than 1.0. When the number of predicted infections is less than 1.0, the number of device days or procedures in that facility is too low to calculate a reliable SIR. For this reason, a SIR could not be calculated for every facility in Hawaii.

There are four possible results for a hospital's SIR:

- If the error bar on the graph (95% CI) falls completely below the reference line of 1.0, the number of infections was lower (better) than what we would predict, based on national data. Represented by a green checkmark on the table: 
   or a green circle: 
   on the SIR graph.
- If the error bar crosses over the reference line of 1.0, the number of infections was similar (not significantly different) than predicted, based on national data. Represented by a yellow equals sign on the table: or a yellow square: on the SIR graph.
- If the number of predicted infections is less than 1.0, then an SIR could not be calculated. Represented by an N/R (not reportable) on the table, it will not be included on the SIR graph (indicated by an \* by the facility name).

## Infection Reporting for Central Line-Associated Bloodstream Infections in ICU locations: 2012



## What is a Central Line-Associated Bloodstream Infection (CLABSI)?

A "central line" or "central catheter" is a tube that is placed into a patient's large vein, usually in the neck, chest, arm, or groin. The central line is often used to draw blood, or give fluids or medications. It may be left in place for several weeks. A bloodstream infection can occur when bacteria or other germs travel down a "central line" and enter the blood. If you develop a central line-associated bloodstream infection (CLABSI) you may become ill with fevers and chills or the skin around the central line may become sore and red. For more information <u>click here</u>.

# What are some of the things that hospitals are doing to prevent CLABSI?

To prevent CLABSI doctors and nurses will:

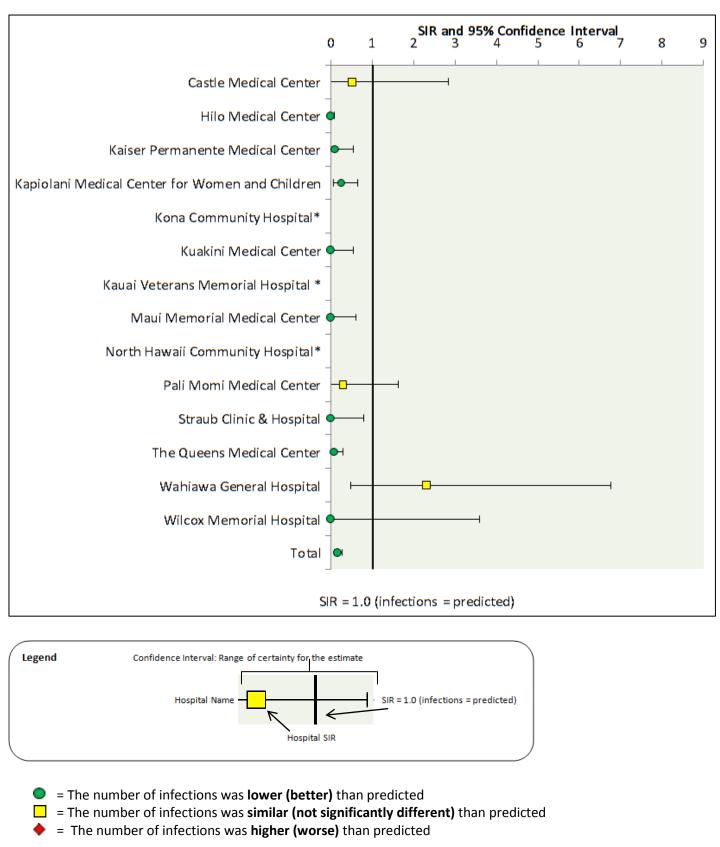
- Clean their hands with soap and water or an alcohol-based hand rub before putting in the central line.
- Clean their hands, wear gloves, and clean the central line opening with an antiseptic solution before using the central line to draw blood or give medications. Healthcare providers also clean their hands and wear gloves when changing the bandage that covers the area where the central line enters the skin.
- Evaluate the patient every day if they still needs to have the central line. The central line will be removed as soon as it is no longer needed.

#### What can you do to help prevent a CLABSI?

- Ask your doctors and nurses to explain why you need the central line and how long you will have it.
- Make sure that all doctors and nurses caring for you clean their hands with soap and water or an alcohol-based hand rub before and after caring for you. If you do not see your providers clean their hands, please ask them to do so.
- Inform your nurse or doctor if the area around your central line is sore or red and if the bandage comes off or becomes wet or dirty.
- Family and friends should clean their hands with soap and water or an alcohol-based hand rub before and after visiting you. If you do not see them clean their hands, ask them to clean their hands.

#### SIRs for Central Line-Associated Bloodstream Infections in ICU locations





Note: Facilities with an asterisk (\*) have less than 1 predicted infection, and therefore do not have an SIR or confidence interval

Central Line-Associated Bloodstream Infections in ICU locations							
January 1, 2012 through December 31, 2012							
Hospital	Hospital Performance Compared To NHSN National Data	Number Of Infections	Number Of Predicted Infections	Number Of Central Line Days	Standardized Infection Ratio	95% Confidence Interval For SIR	
Castle Medical Center		1	1.96	1308	0.51	0.1, 2.84	
Hilo Medical Center	~	0	4.76	3176	0	0, 0.08	
Kaiser Permanente Medical Center	~	1	10.26	4647	0.1	0, 0.54	
Kapiolani Medical Center for Women and Children	~	4	15.64	7084	0.26	0.07, 0.66	
Kona Community Hospital	N/R	1	0.78	519	Too Small to Calculate		
Kuakini Medical Center	$\checkmark$	0	6.78	3227	0	0, 0.54	
Kauai Veterans Memorial Hospital	N/R	0	0.09	45	Too Small to Calculate		
Maui Memorial Medical Center	~	0	6.02	4015	0	0, 0.61	
North Hawaii Community Hospital	N/R	0	0.43	287	Too Small to Calculate		
Pali Momi Medical Center		1	3.41	2274	0.29	0.01, 1.63	
Straub Clinic & Hospital	<b>\</b>	0	4.64	3095	0	0, 0.80	
The Queen's Medical Center		2	24.96	11963	0.08	0.01, 0.29	
Wahiawa General Hospital		3	1.30	682	2.32	0.48, 6.77	
Wilcox Memorial Hospital	5	0	1.03	683	0	0, 3.6	
Hawaii Total		15	82.07	43005	0.18	0.10, 0.30	

Note: Reporting in Hawaii is tied to CMS IQR reporting requirements. Kapiolani Medical Center for Women & Children enters data only for their Neonatal ICU and Pediatric ICU into NHSN. Shriners Hospital for Children does not have an ICU and therefore does not have data for this condition.

#### Legend:

- The number of infections was lower (better) than predicted
- = The number of infections was **similar (not significantly different)** than predicted
- ∇ = The number of infections was **higher (worse)** than predicted
- Not reportable (N/R) = ICU patients had too few central line days to calculate a reliable SIR. When SIR cannot be calculated, a comparison to national data is not possible.

Too Small to Calculate = The expected number of infections was below 1

## Infection Reporting for Catheter Associated Urinary Tract Infections in ICU locations: 2012



## What is a Catheter Associated Urinary Tract Infection (CAUTI)?

A urinary catheter is a thin tube placed in the bladder to drain urine. Urine drains through the tube into a bag that collects the urine. People with urinary catheters have a much higher chance of getting a urinary tract infection than people who don't have a catheter. A urinary tract infection is an infection in the urinary system, which includes the bladder (which stores the urine) and the kidneys (which filter the blood to make urine). Germs (for example, bacteria or yeasts) do not normally live in these areas; but if germs are introduced, an infection can occur. If you have a urinary catheter, germs can travel along the catheter and cause an infection in your bladder or your kidney; in that case it is called a catheter-associated urinary tract infection (CAUTI). For more information <u>click here</u>.

# What are some of the things that hospitals are doing to prevent CAUTI?

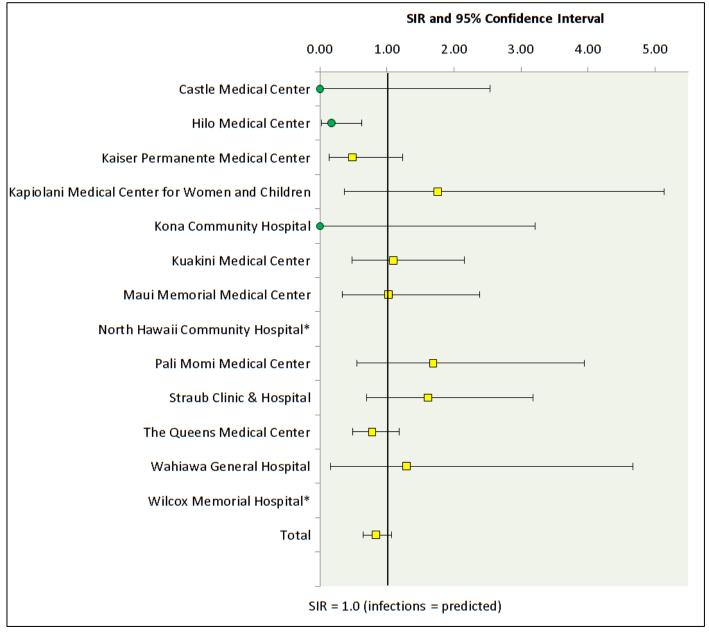
To prevent CAUTI, doctors and nurses take the following actions:

- Catheters are put in only when necessary and are routinely evaluated to determine if they can be removed as soon as possible.
- Catheters are inserted and removed by properly trained persons using sterile (clean) technique.
- The skin in the area where the catheter will be inserted is cleaned before inserting the catheter.
- Healthcare providers clean their hands by washing them with soap and water or using an alcohol-based hand rub before and after touching a catheter.

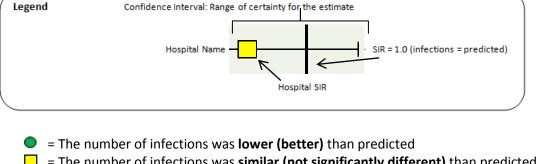
#### What can you do to help prevent a CAUTI?

- Ask your healthcare provider each day if you still need the catheter.
- Make sure that all doctors and nurses caring for you clean their hands with soap and water or an alcohol-based hand rub before and after caring for you. If you do not see your providers clean their hands, please ask them to do so.
- Always clean your hands before and after doing catheter care.
- Always keep your urine bag below the level of your bladder.
- Family and friends should clean their hands with soap and water or an alcohol-based hand rub before and after visiting you. If you do not see them clean their hands, ask them to clean their hands.

#### SIRs for Catheter Associated Urinary Tract Infections in ICU locations



#### January 1st 2012 - December 31st 2012



- = The number of infections was **similar (not significantly different)** than predicted
- = The number of infections was higher (worse) than predicted

Note: Facilities with an asterisk (\*) have less than 1 predicted infection, and therefore do not have an SIR or confidence interval

	Catheter Associa	ated Urinary T	ract Infections	in ICU locations	5	
	January :	1 <sup>st</sup> , 2012 throu	gh December 3	1 <sup>st</sup> , 2012		
Hospital	Hospital Performance Compared To NHSN National Data	Number Of Infections	Number Of Predicted Infections	Number Of Catheter Days	Standardized Infection Ratio	95% Confidence Interval For SIR
Castle Medical Center		0	1.45	1116	0.00	0, 2.54
Hilo Medical Center		2	11.62	8937	0.17	0.02, 0.62
Kaiser Permanente Medical Center		4	8.31	3725	0.48	0.13, 1.23
Kapiolani Medical Center for Women and Children		3	1.71	660	1.76	0.36, 5.13
Kona Community Hospital		0	1.42	1089	0.00	0, 3.21
Kuakini Medical Center		8	7.30	3174	1.10	0.47, 2.16
Maui Memorial Medical Center		5	4.89	4077	1.02	0.33, 2.39
North Hawaii Community Hospital	N/R	1	0.63	485	Too Small To	o Calculate
Pali Momi Medical Center		5	2.96	2276	1.69	0.55, 3.94
Straub Clinic & Hospital		8	4.96	3861	1.61	0.70, 3.18
The Queen's Medical Center		22	28.23	10876	0.78	0.49, 1.18
Wahiawa General Hospital		2	1.55	774	1.29	0.16, 4.67
Wilcox Memorial Hospital	N/R	3	0.95	731	Too Small To Calculate	
Hawaii Total		63	75.98	41781	0.83	0.64, 1.07

Note: Reporting in Hawaii is tied to CMS IQR reporting requirements. Shriners Hospital for Children does not have an ICU and therefore does not have data for this condition. Kauai Veterans Memorial Hospital is not mandated for reporting CAUTI into NHSN.

#### Legend:

The number of infections was lower (better) than predicted

= The number of infections was **similar (not significantly different)** than predicted

∇ = The number of infections was **higher (worse)** than predicted

Not reportable (N/R) = ICU patients had too few catheter days to calculate a reliable SIR. When SIR cannot be calculated, a comparison to national data is not possible.

Too Small to Calculate = The expected number of infections was below 1

## Infection Reporting for Inpatient Colon Surgery – Surgical Site Infection: 2012 What is a Surgical Site Infection (SSI)?



A SSI is an infection that occurs after surgery in the part of the body where the surgery took place. Most surgery patients do not develop an infection. However, infections develop in about 1 to 3 out of every 100 patients who have surgery. For more information <u>click here</u>.

## What is Colon Surgery (COLO)?

COLO is a surgical procedure that includes incision, resection, or the joining of the colon (large intestines). It does not include rectal operations.

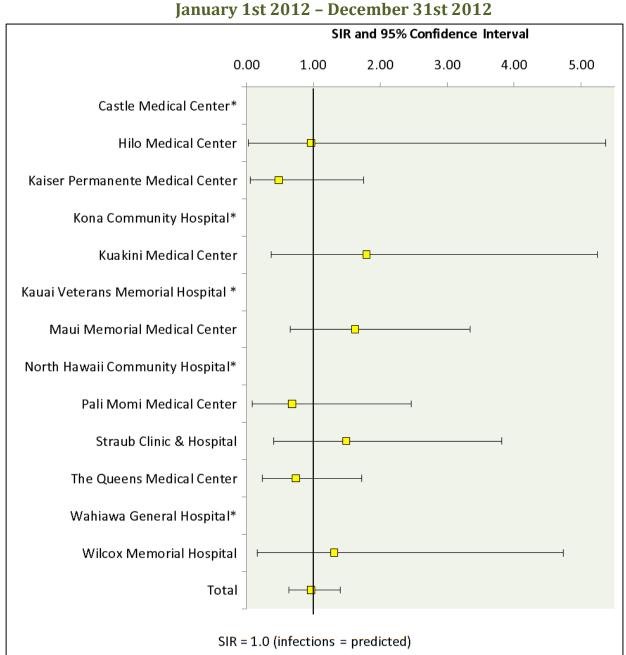
# What are some of the things that hospitals are doing to prevent SSIs?

To prevent SSIs, doctors, nurses and other healthcare providers:

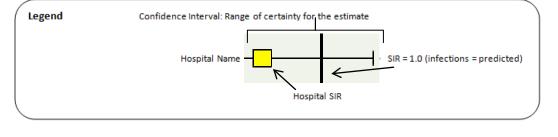
- Clean their hands and arms up to their elbows with an antiseptic agent just before the surgery.
- May remove some of your hair immediately before your surgery using electric clippers if the hair is in the same area where the procedure will occur. They should not shave you with a razor.
- Give you antibiotics before your surgery starts. In most cases, you should get antibiotics within 60 minutes before the surgery starts and antibiotics should be stopped within 24 hours after surgery.

#### What can you do to help prevent a SSI?

- Make sure that your healthcare providers clean their hands before and after examining you; either with soap and water or an alcohol-based hand rub. If you do not see your providers clean their hands, please ask them to do so.
- Do not shave surgical area with a razor prior to surgery.
- Speak up if someone tries to shave you with a razor before surgery. Ask why you need to be shaved and talk with your surgeon if you have any concerns.
- Family and friends should clean their hands with soap and water or an alcohol-based hand rub before and after visiting you. If you do not see them clean their hands, ask them to clean their hands.



#### SIRs for Inpatient Colon Surgery – Surgical Site Infection January 1st 2012 – December 31st 2012



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= The number of infections was similar (not significantly different) than predicted

= The number of infections was higher (worse) than predicted

Note: Facilities with an asterisk (\*) have less than 1 predicted infection, and therefore do not have an SIR or confidence interval

	Innetic		Current of City	. tufaattaa		
		ent Colon Surge ry 1 <sup>st</sup> , 2012 thro				
Hospital	Hospital Performance Compared To NHSN National Data	Number Of Infections	Number Of Predicted Infections	Number Of Procedures	Standardized Infection Ratio	95% Confidence Interval For SIR
Castle Medical Center	N/R	1	0.68	22	Too Small To	o Calculate
Hilo Medical Center		1	1.04	35	0.963	0.02, 5.37
Kaiser Permanente Medical Center		2	4.12	140	0.486	0.06, 1.75
Kona Community Hospital	N/R	0	0.90	32	Too Small To	o Calculate
Kuakini Medical Center		3	1.67	55	1.794	0.37, 5.24
Kauai Veterans Memorial Hospital	N/R	0	0.11	4	Too Small To	o Calculate
Maui Memorial Medical Center		7	4.31	130	1.623	0.65, 3.34
North Hawaii Community Hospital	N/R	0	0.55	18	Too Small To	o Calculate
Pali Momi Medical Center		2	2.94	93	0.681	0.08, 2.46
Straub Clinic & Hospital		4	2.68	84	1.491	0.4, 3.82
The Queen's Medical Center		5	6.76	215	0.74	0.24, 1.73
Wahiawa General Hospital	N/R	0	0.66	22	Too Small To	o Calculate
Wilcox Memorial Hospital	N/A	2	1.53	49	1.311	0.16, 4.74
Hawaii Total		27	27.95	899	0.966	0.64, 1.41

Note: Reporting in Hawaii is tied to CMS IQR reporting requirements. Shriners Hospital for Children does not perform this procedure. Kapiolani Medical Center for Women and Children is not mandated for reporting COLO SSI into NHSN.

#### Legend:

The number of infections was lower (better) than predicted

= The number of infections was **similar (not significantly different)** than predicted

∇ = The number of infections was **higher (worse)** than predicted

Not reportable (N/R) = ICU patients had too few COLO procedures to calculate a reliable SIR. When SIR cannot be calculated, a comparison to national data is not possible.

Too Small to Calculate = The expected number of infections was below 1

## Infection Reporting for Inpatient Abdominal Hysterectomy – Surgical Site Infection: 2012 What is a Surgical Site Infection (SSI)?



A SSI is an infection that occurs after surgery in the part of the body where the surgery took place. Most surgery patients do not develop an infection. However, infections develop in about 1 to 3 out of every 100 patients who have surgery. For more information <u>click here</u>.

## What is an Abdominal Hysterectomy (HYST)?

HYST is a hysterectomy that involves an incision in the abdominal wall, where the uterus is removed. This includes hysterectomy procedures done by laparoscope.

# What are some of the things that hospitals are doing to prevent SSIs?

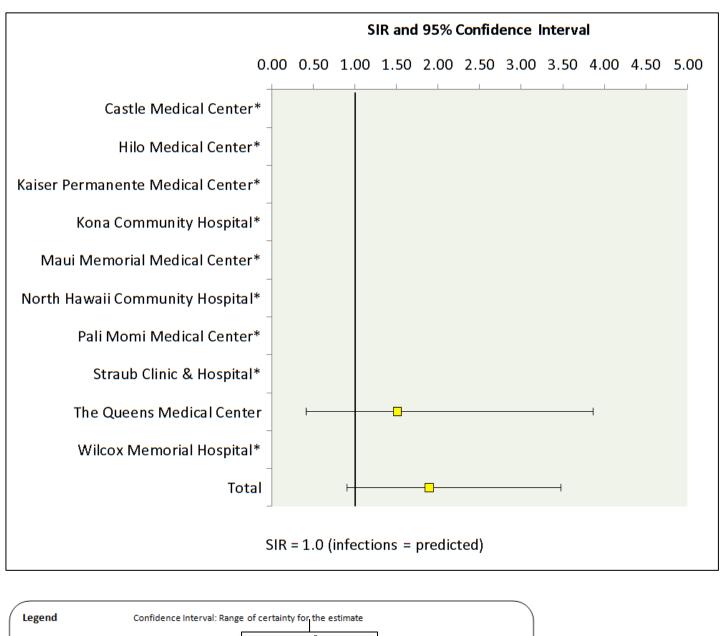
To prevent SSIs, doctors, nurses and other healthcare providers:

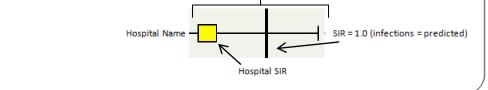
- Clean their hands and arms up to their elbows with an antiseptic agent just before the surgery.
- May remove some of your hair immediately before your surgery using electric clippers if the hair is in the same area where the procedure will occur. They should not shave you with a razor.
- Give you antibiotics before your surgery starts. In most cases, you should get antibiotics within 60 minutes before the surgery starts and antibiotics should be stopped within 24 hours after surgery.

#### What can you do to help prevent a SSI?

- Make sure that your healthcare providers clean their hands before and after examining you; either with soap and water or an alcohol-based hand rub. If you do not see your providers clean their hands, please ask them to do so.
- Speak up if someone tries to shave you with a razor before surgery. Ask why you need to be shaved and talk with your surgeon if you have any concerns.
- Family and friends should clean their hands with soap and water or an alcohol-based hand rub before and after visiting you. If you do not see them clean their hands, ask them to clean their hands.

#### SIRs for Inpatient Abdominal Hysterectomy – Surgical Site Infection January 1<sup>st</sup> 2012 – December 31<sup>st</sup> 2012





= The number of infections was lower (better) than predicted

= The number of infections was **similar (not significantly different)** than predicted

= The number of infections was higher (worse) than predicted

Note: Facilities with an asterisk (\*) have less than 1 predicted infection, and therefore do not have an SIR or confidence interval

Inpatient Abdominal Hysterectomy – Surgical Site Infection January 1 <sup>st</sup> , 2012 through December 31 <sup>st</sup> , 2012							
Hospital	Hospital Performance Compared To NHSN National Data	Number Of Infections	Number Of Predicted Infections	Number Of Procedures	Standardized Infection Ratio	95% Confidence Interval For SIR	
Castle Medical Center	N/R	1	0.14	12	Too Small To	o Calculate	
Hilo Medical Center	N/R	3	0.58	63	Too Small To	o Calculate	
Kaiser Permanente Medical Center	N/R	0	0.81	124	Too Small To	o Calculate	
Kona Community Hospital	N/R	0	0.03	2	Too Small To	o Calculate	
Maui Memorial Medical Center	N/R	0	0.29	28	Too Small To	o Calculate	
North Hawaii Community Hospital	N/R	0	0.19	27	Too Small To	o Calculate	
Pali Momi Medical Center	N/R	0	0.04	6	Too Small To	o Calculate	
Straub Clinic & Hospital	N/R	1	0.29	24	Too Small To	o Calculate	
The Queen's Medical Center		4	2.65	312	1.511	0.41, 3.87	
Wilcox Memorial Hospital	N/R	1	0.28	33	Too Small To	o Calculate	
Hawaii Total		10	5.28	631	1.893	0.91, 3.48	

Note: Reporting in Hawaii is tied to CMS IQR reporting requirements. Shriners Hospital for Children, Kuakini Medical Center and, Wahiawa General Hospital do not perform this procedure. Kapiolani Medical Center for Women and Children, Kauai Veterans Memorial Hospital are not mandated for reporting HYST SSI into NHSN.

#### Legend:

Interpretent of infections was lower (better) than predicted

= The number of infections was **similar (not significantly different)** than predicted

∇ = The number of infections was **higher (worse)** than predicted

Not reportable (N/R) = ICU patients had too few HYST procedures to calculate a reliable SIR. When SIR cannot be calculated, a comparison to national data is not possible.

Too Small to Calculate = The expected number of infections was below 1

### Hospital Summary Table

Facility	CLABSI	CAUTI	COLO	HYST
Castle Medical Center		<b>_</b>	N/R	N/R
Hilo Medical Center		~		N/R
Kaiser Permanente Medical Center	1			N/R
Kapiolani Medical Center for Women and Children			**	**
Kona Community Hospital	N/R		N/R	N/R
Kuakini Medical Center	<b>_</b>			**
Kauai Veterans Memorial Hospital	N/R	* *	N/R	* *
Maui Memorial Medical Center				N/R
North Hawaii Community Hospital	N/R	N/R	N/R	N/R
Pali Momi Medical Center				N/R
Straub Clinic & Hospital	$\checkmark$			N/R
The Queen's Medical Center				
Wahiawa General Hospital			N/R	N/R
Wilcox Memorial Hospital	~	N/R	N/R	N/R
Hawaii Total				

#### Legend:

- The number of infections was lower (better) than predicted
- = The number of infections was **similar (not significantly different)** than predicted
- ∇ = The number of infections was **higher (worse)** than predicted
- Not reportable (N/R) = ICU patients had too few device days or procedures to calculate a reliable SIR. When SIR cannot be calculated, a comparison to national data is not possible.
- \*\* = Surveillance not mandated for reporting into NHSN on this device or procedure. Or procedure not performed at this facility.

#### **Acknowledgements:**

We would like to acknowledge the Vermont Program for Quality in Health Care for developing the format and select content of this document. We would like to recognize the staff at the Division of Healthcare Quality Promotion at the CDC for their technical assistance. We would also like to thank the members of the Hawaii HAI Advisory Committee in providing guidance in the completion of this report. Please see the next page for a list of the HAI Advisory Committee members.

#### **HAI Advisory Committee:**

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