Catheter-Associated Urinary Tract Infection Surveillance

Last updated 2019

Basics of Infection Prevention
Healthcare-Associated Infections Program
Center for Health Care Quality
California Department of Public Health

Objectives

- Review CAUTI surveillance definitions
- Discuss importance of accurate data collection
- Demonstrate how to report CAUTI data in NHSN
- Discuss NHSN data analysis and feedback to staff

Clinical vs Surveillance Definitions

Clinical criteria used by physicians for patient care and management may differ from surveillance criteria

- Clinical
  - Patient centered
  - Used for therapeutic decisions
- Surveillance
  - Population based
  - Applied exactly the same way each time

CAUTI Surveillance Definitions

UTI may or may not be associated with use of a urinary catheter (CAUTI vs. UTI)

- For CAUTI:

Catheter must be in place
>2 days (Day 1= day of insertion)

And

Catheter still present
Or
Catheter removed day of or day prior to when UTI criteria met

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CAUTI Surveillance Definitions- 2

- NHSN infection window period
  - Seven days during which all site-specific infection criteria must be met
- Criteria for CAUTI include specific clinical symptoms and positive urine culture, and sometimes positive blood culture
- Includes the day the **first** positive diagnostic test (urine culture or blood culture for CAUTI) was obtained, 3 calendar days before and 3 calendar days after

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CAUTI Infection Window Period
Acute Care Hospitals

- For CAUTI, the first diagnostic test will be either a positive urine or blood culture

Infection Window Period:	3 days before first positive diagnostic test			FIRST POSITIVE DIAGNOSTIC TEST	3 days after first positive diagnostic test		
Example:	Mar 7	Mar 8	Mar 9	Mar 10	Mar 11	Mar 12	Mar 13

CAUTI Infection Criteria- Acute Care Hospitals

Diagnostic Test for Possible CAUTI	Localized Sign or Symptom Examples for Possible CAUTI
• Positive urine or blood culture	• Suprapubic tenderness • Costovertebral angle pain • Urgency • Frequency • Dysuria • Fever

CAUTI Cannot Re-Occur in the Same Patient Within a 14-Day Period

No new CAUTI can be reported within a 14-day repeat infection timeframe (RIT)

- The date of the CAUTI event is considered day 1
- A new CAUTI is not reported until 14 days have elapsed
- If a new pathogen is identified in the urine within the 14-day period it should be added to the CAUTI already reported
- Refer to the NHSN CAUTI protocol for more details

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CAUTI Location Attribution

- Attribute CAUTI to the inpatient location where the patient was assigned on the date of infection event
- If all elements of CAUTI are present on the date of transfer or discharge, or the next day, the CAUTI is attributed to the transferring/discharging location

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Symptomatic CAUTI Surveillance Definition

Symptomatic CAUTI requires the patient to have both clinical and microbiologic findings within a 7-day window period

- **Refer to written definitions frequently when performing UTI surveillance**
- Urine culture must grow no more than two species of organisms, at least one of which is bacteria of $\geq 10^5$ CFU/ml

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Asymptomatic CAUTI with Bacteremia Surveillance Definition

Asymptomatic UTI with Bacteremia (ABUTI) requires the following **three** criteria within a 7-day window period:

1. Urine culture with no more than two species of organisms, at least one of which is a bacteria of $>10^5$ CFU/ml
2. Positive blood culture with at least one matching bacteria to the urine **or** 2 positive blood cultures with common commensal bacteria and a matching common commensal in the urine
3. No clinical signs or symptoms of CAUTI

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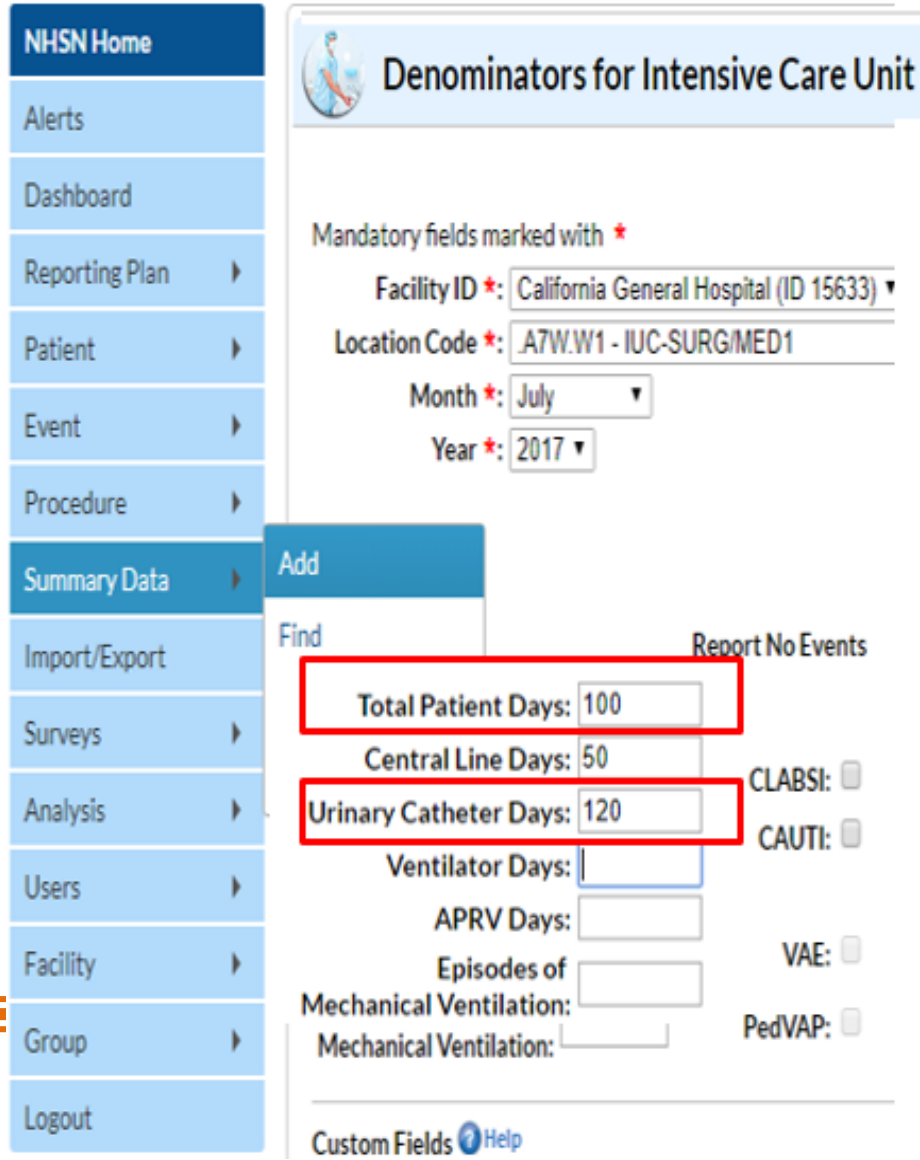
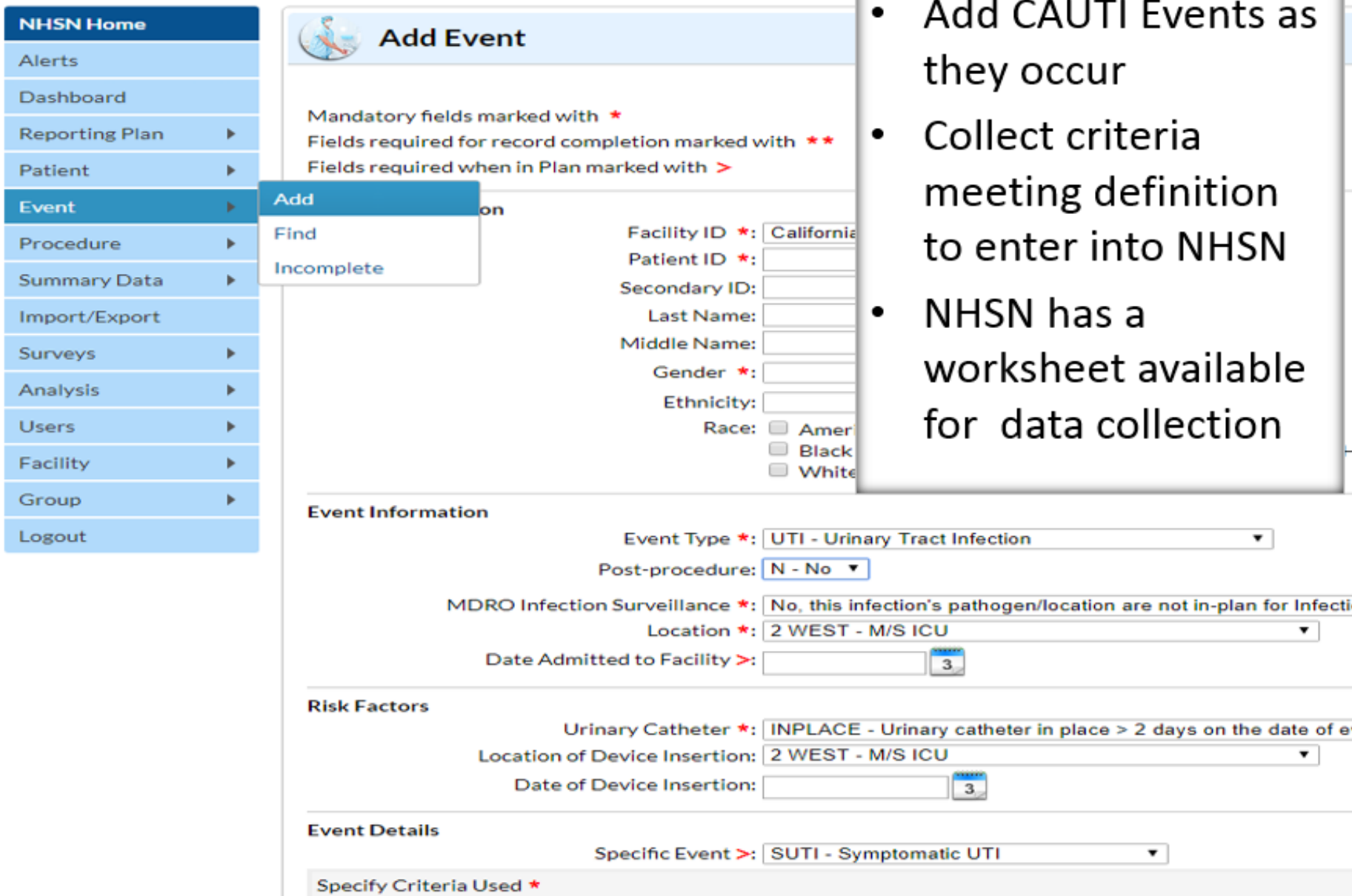
Report Monthly CAUTI Summary Data to NHSN



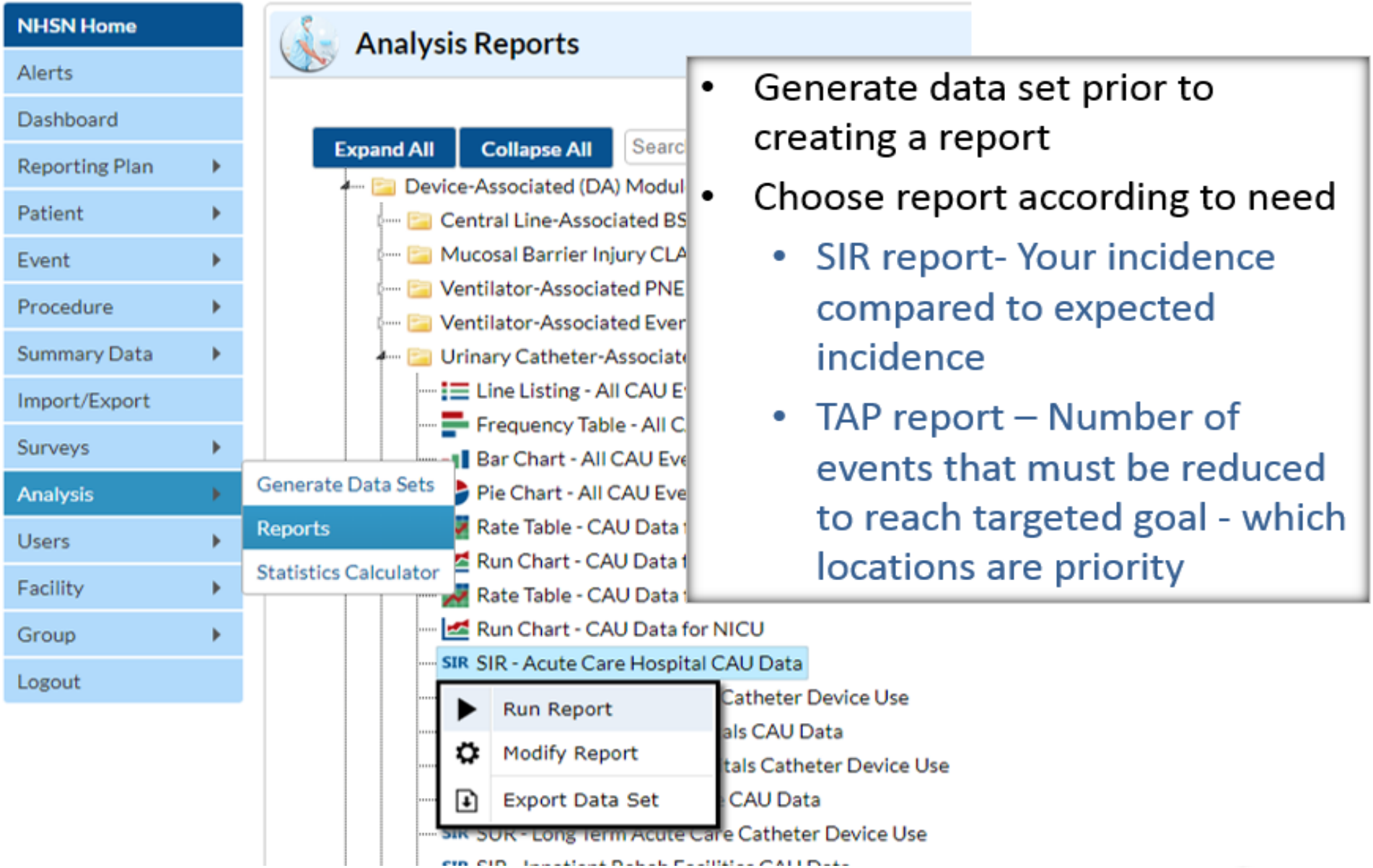
- Enter monthly denominator data for each patient location
  - Patient days
  - Urinary catheter days

Report CAUTI Event to NHSN



- Add CAUTI Events as they occur
- Collect criteria meeting definition to enter into NHSN
- NHSN has a worksheet available for data collection

NHSN CAUTI Analysis Reports



- Generate data set prior to creating a report
- Choose report according to need
  - SIR report- Your incidence compared to expected incidence
  - TAP report – Number of events that must be reduced to reach targeted goal - which locations are priority

NHSN CAUTI SIR Reports

summaryYH	infCount	numPred	numucathdays	SIR	SIR_pval	sir95ci
2017H1	5	9.689	9541	0.516	0.1155	0.189, 1.144

Facility SIR

loccdc	summaryYH	infCount	numPred	numucathdays	SIR	SIR_pval	sir95ci
IN:ACUTE:CC:CT	2017H1	0	0.980	959	.	.	
IN:ACUTE:CC:MS	2017H1	1	2.966	2904	0.337	0.2557	0.017, 1.663
IN:ACUTE:STEP	2017H1	1	0.918	802	.	.	
IN:ACUTE:WARD:M	2017H1	0	1.390	1372	0.000	0.2492	, 2.156
IN:ACUTE:WARD:MS	2017H1	0	1.392	1526	0.000	0.2485	, 2.152
IN:ACUTE:WARD:ONC_HONC	2017H1	1	0.525	402	.	.	
IN:ACUTE:WARD:S	2017H1	2	0.714	782	.	.	
IN:ACUTE:WARD:TEL	2017H1	0	0.804	794	.	.	

SIR by Location

loccdc	summaryYH	numucathdays	numPredDDays	SUR	SUR_pval	SUR95CI
IN:ACUTE:CC:CT	2017H1	959	1,060.626	0.904	0.0016	0.848, 0.963
IN:ACUTE:CC:MS	2017H1	2904	3,276.933	0.886	0.0000	0.854, 0.919
IN:ACUTE:STEP	2017H1	802	759.748	1.056	0.1318	0.984, 1.131
IN:ACUTE:WARD:M	2017H1	1372	1,766.447	0.777	0.0000	0.736, 0.819
IN:ACUTE:WARD:MS	2017H1	1526	1,662.447	0.918	0.0007	0.873, 0.965
IN:ACUTE:WARD:ONC_HONC	2017H1	402	404.483	0.994	0.9280	0.900, 1.095
IN:ACUTE:WARD:S	2017H1	782	1,173.094	0.667	0.0000	0.621, 0.715
IN:ACUTE:WARD:TEL	2017H1	794	1,300.469	0.611	0.0000	0.569, 0.654

SUR by Location

California Department of PublicHealth

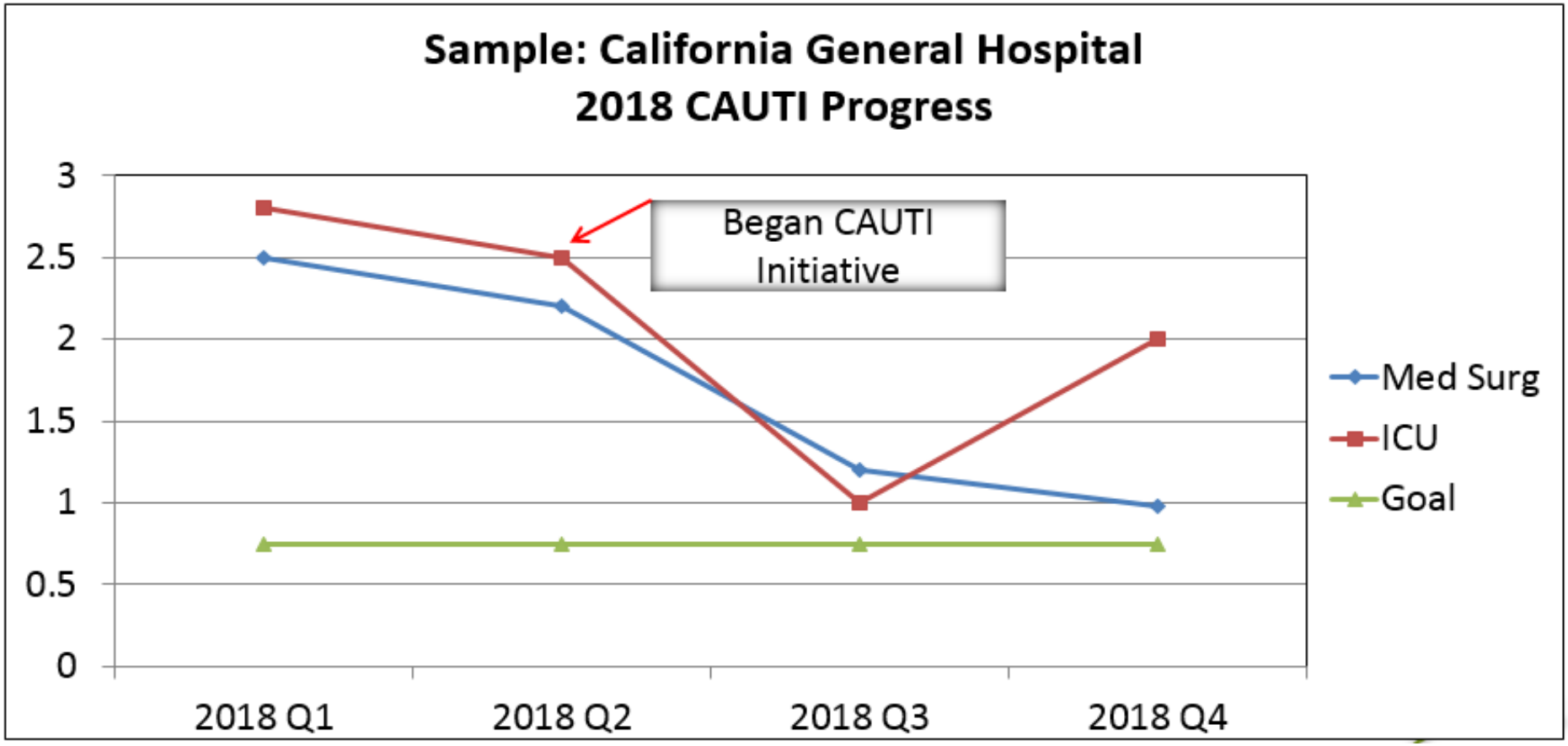
CAUTI TAP Report

	LOCATION							
Facility CAD	Location Rank	Location	CDC Location	Events	Central Line Days	DUR %	CAD	SIR
1.96	1	6E ONC	IN:ACUTE:WARD:ONC_HONC	3	1883	62	2.00	1.50
	2	CCU	IN:ACUTE:CC:CT	2	1082	64	1.46	1.84
	3	5 MED	IN:ACUTE:WARD:M	2	3199	26	0.61	0.72
	4	ICU	IN:ACUTE:CC:MS	1	2207	42	-0.11	0.45
	5	ICCU	IN:ACUTE:STEP	0	700	24	-0.32	.
	6	CMU NEW	IN:ACUTE:WARD:TEL	0	1178	16	-0.51	0.00
	7	6S 6W	IN:ACUTE:WARD:S	0	1245	24	-0.54	0.00
	8	4 M/S	IN:ACUTE:WARD:MS	0	1434	15	-0.62	0.00

- Prioritize locations with highest cumulative attributable difference (CAD) – the number of infections we would have needed to prevent to reach goal

Track Progress Over Time

- Feedback results to your staff and leadership
- Changes in CAUTI incidence should be visible over time
- In the example, we can see ICU needed additional interventions



CAUTI Surveillance Summary

- Consistent use of standard surveillance methods and CAUTI definitions are essential for accurate case finding
- Capturing complete and accurate data is necessary for precise CAUTI SIR calculation
- Perform surveillance and feedback CAUTI SIR with adherence monitoring results to all units and leadership

References and Resources

- Gould CV, Umscheid CA, Agarwal RK, Kuntz G, Pegues DA, and HICPAC. Guideline for Prevention of Catheter-associated Urinary Tract Infections 2009 (http://www.cdc.gov/hicpac/pdf/CAUTI/CAUTIguideline2009final.pdf)
- IHI Program to Prevent CAUTI http://www.ihi.org/topics/CAUTI/Pages/default.aspx
- APIC Preventing CAUTI: A patient-centered approach ,2012 http://apic.org/Resource_/TinyMceFileManager/epublications/CAUTI_feature_PS_fall_12.pdf
- IDSA Guidelines , *Clin Infect Dis* 50:625-63, 2010
- SHEA/IDSA Compendium, *ICHE*, 35:464-479, 2014
- National Quality Forum (NQF) Safe Practices for Better Healthcare,2010

Questions?

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