



UCSF Health


Using all the pieces of the puzzle:
 A comprehensive approach to
 reducing catheter-associated
 urinary tract infections in a
 Neuro ICU

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Objectives

- Describe the components and subsequent impact of a successful comprehensive CAUTI reduction campaign in a single unit.
- Describe which areas of CNS practice were leveraged to foster success in this campaign.

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Significance and Background

What's the big picture problem?

- Catheter-associated urinary tract infections (CAUTI) are a common hospital acquired infection
- Estimated that about 20% of healthcare associated bacteremias stem from urinary tract
 - (Gould, Umscheid, Agarwal, et al. 2010)
- Risk of CAUTI increases 3-10% each day of catheterization
 - (Haley, Hooton, Culver, et al, 1981)
 - (Warren, Platt, Thomas, et al, 1978)

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What is so different about neuro patients?

- Presence of cognitive, motor, sensory deficits
 - Long indwelling urinary catheter (IUC) dwell times
- Non-infectious or “central” fevers
 - Diagnosis of exclusion

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UCSF Neurological ICU

- 29 beds split across 2 physical units
- Employs approximately 140 registered nurses and 10 patient care assistants (PCA)
- Primary patient populations include stroke (SAH, ICH, ischemic), tumor, spine, neuro disorders, no trauma

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Current state of CAUTI

Where did things stand in the Neuro ICU?

- In fiscal year 2016:
 - 32 events
 - Rate of 6.45
 - (# CAUTI events/1000 IUC days)
- Taskforce comprised of the unit's CNS, administrative team, and medical director was formalized in FY16 Q4

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Approach

How and what do we want to change in FY17?

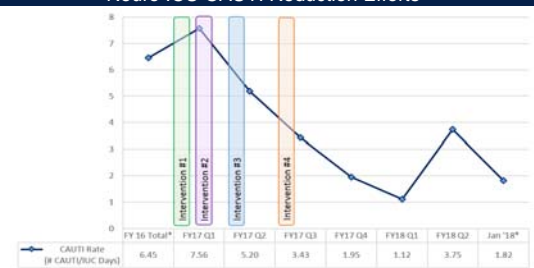
- Two interventions aimed to target long dwell times of IUC in neuro ICU
- CAUTI events tracked monthly
- CAUTI, urine culture, and device utilization rates were tracked quarterly

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Spoiler alert – here's how we did!

Neuro ICU CAUTI Reduction Efforts



But how did we get here?

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Urinalysis and Urine Cultures

Intervention #1

- Problem:
 - Urinalysis (UA) and urine culture (Ucx) sent simultaneously
 - IUC changed upon initiation of antibiotics
- Solution:
 - UA sent first and UCx only if UA positive
 - If UCx indicated, replace IUC prior to obtaining UCx specimen

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Silver alloy catheters

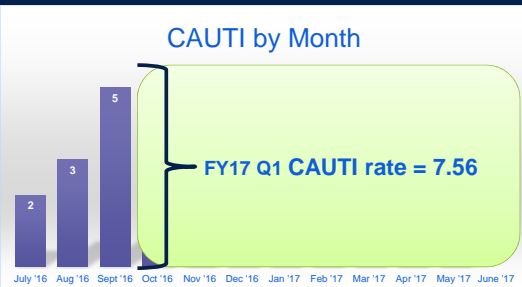
Intervention #2

- Problem:
 - IUC stocked were standard latex
 - Alternative IUC materials available
- Solution:
 - Silver alloy coated catheters introduced to unit
 - Replaced normal stock
 - Utilize for patients with anticipated need >72 hrs

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Let's check in – where are we now?



We knew we could do better...

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CAUTI “Case Studies”

Intervention #3

- Problem:
 - RNs encountering resistance from providers
 - RNs had knowledge gap about adherence to new work
- Solution:
 - Feedback to individuals and staff of adherence to new process

CAUTI Events	CAUTI Events	
	Was UA result POSITIVE before U Ca Slew?	Was catheter changed for DNC/d before U Ca was slew?
CAUTI #1	NO	NO
CAUTI #2	NO	NO
CAUTI #3	YES	YES
CAUTI #4	NO	NO
CAUTI #5	YES	YES
CAUTI #6	NO	YES
CAUTI #7	YES	NO
CAUTI #8	NO	NO
CAUTI #9	NO	NO
CAUTI #10	YES	NO

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CAUTI Case Studies, cont'd.

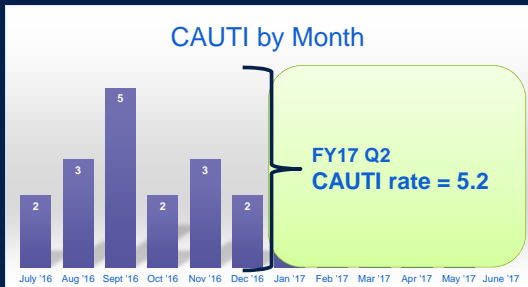
- Graph was adapted over time:

	Was UA resulted POSITIVE before U Cx Sent?	Was catheter changed (or DIC'd) before U Cx was sent?	Male / Female	Loose Stool Prior to CAUTI?	Organism
CAUTI #10	YES	NO	F	YES	<i>Escherichia coli</i>
CAUTI #11	YES	YES	M	YES	<i>Escherichia coli</i>
CAUTI #12	NO	YES	F	NO	<i>Escherichia coli</i> , <i>Enterococcus</i> spp
CAUTI #13	YES	YES	F	YES	<i>Escherichia coli</i> , <i>Enterococcus</i> spp
CAUTI #14	YES	YES	F	YES	<i>Escherichia coli</i> , <i>Klebsiella pneumoniae</i>
CAUTI #15	NO	NO	F	YES	<i>Escherichia coli</i>

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Let's check in – where are we now?

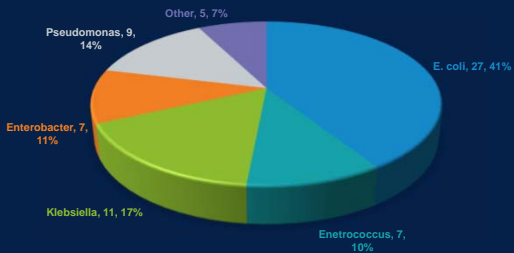


We knew we could do better still...

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Neuro ICU CAUTI by Organism FY 15, 16, and 17



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Peer to peer education

Intervention #4

- Problem:
 - RNs/PCAs not oriented to IUC care expectations
 - Majority of organisms from cultures were GI
 - High compliance for prevention bundle
 - Observations identified inconsistent and varied technique for catheter and perineal care

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Peer to peer education

Intervention #4

- Solution:
 - 1:1 education of every RN and PCA by RN CAUTI champions
 - Standardized care “check-list”
 - Education/awareness content
 - Fecal management strategies
 - Groin task trainer & video
 - “Buddy” training approach

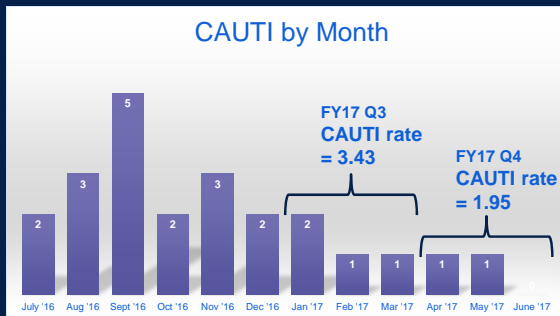


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Let's check in one last time...

CAUTI by Month



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Neuro ICU CAUTI Reduction Efforts



Results

Let's revisit our results in FY 17

- CAUTI rate decreased from 7.56 to 1.95
 - Decrease of 74% ↓
- Number of CAUTIs decreased from 32 to 23
 - Decrease of 28% ↓
- Urine culture rates decreased from 6.61 to 3.47
 - Decrease of almost 50% ↓
- Device utilization remained stable

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Take-Away

What can we do with these results?

- **Combination** of interventions was effective at dramatically reducing CAUTI rates:
 - Urinalysis with reflex urine cultures
 - Silver alloy coated catheters
 - CAUTI awareness campaign
 - Peer to peer education

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Next Steps

Where do we go from here?

- Spreading peer to peer education
 - In progress!
- Organizational process to perform urinalysis with reflex urine culture
 - Live!
- Exploring alternatives to indwelling catheters, fecal management
 - In progress!

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Lessons Learned

If we can offer any advice...

- Engage your group of enthusiastic and dedicated champions
 - Champions were integral to staff buy in
- Include ancillary staff (nursing assistants)
- Be prepared with answers to nurse questions or resistance to adopting new practices

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The CNS Role

- Considering the substantive areas of CNS practice described by Lewandowski and Adamle (2009), this project relied heavily on:
 - Facilitating change within the health system
 - Promoting quality improvement
 - Educating and supporting interdisciplinary staff
 - Formal and informal education
 - Collaboration
- These align with the patient, nurse, and systems spheres of CNS practice

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References

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