Behind the Mask:

Fundamentals of a Successful Catheter-Associated Urinary Tract Infection (CAUTI) Prevention Program

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Meet our Subject Matter Experts

Alisha Sheffield BSN, RN CIC

Alisha is an Infection Preventionist and Registered Nurse with 21 years of experience in a variety of healthcare settings including ambulatory, acute care, and surgical areas. Over the past 13 years, she has worked as an Infection Preventionist in outpatient surgery as well as at a large academic medical center. Her recent work has focused on utilizing her IPC expertise to develop infection control tools and resources to assist Infection Preventionists in under-resourced settings.

Lauren Musil BSN, RN

Lauren is an Infection Preventionist with a background as Registered Nurse. She has a wide variety of healthcare experience having worked in neurology, neurosurgery, ambulatory surgery, home health and with the Nebraska Biocontainment unit. As an IP, her primary focus was in critical care, oncology, VAE prevention and as the IP to the Nebraska Biocontainment Unit. Her recent work has been spent in a grant funded role to develop innovative tools to aid IPs in rural and remote settings.

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Disclosure Declaration

- We have no financial disclosures or conflicts related to this presentation.
- This work has been grant funded through the Center for Disease Control and Prevention in support of Project Firstline.
- The views and opinions expressed during this webinar are those of the presenters and do not necessarily reflect those of the University of Nebraska Medical Center, The Nebraska Medical Center or the Centers for Disease Control and Prevention.

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Overall Series Objectives

- Analyze the fundamental components of a robust infection prevention and control program
- Interpret guidelines, regulatory requirements, and best practice literature for a successful application to the infection prevention program
- Utilize identified strategies to incorporate best practice into Infection Prevention programs
- Integrate Infection Prevention program data to target prevention and improvement strategies
- Combine acquired knowledge to enhance collaboration and teamwork within the healthcare system

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IPC Program Objectives

- Describe key components of a CAUTI prevention program
- Demonstrate the ability to perform CAUTI gap analyses, CAUTI risk assessment, and CAUTI surveillance.
- Develop the ability to leverage CAUTI data into quality improvement initiatives.
- Correlate CAUTI outcome data and patient safety.

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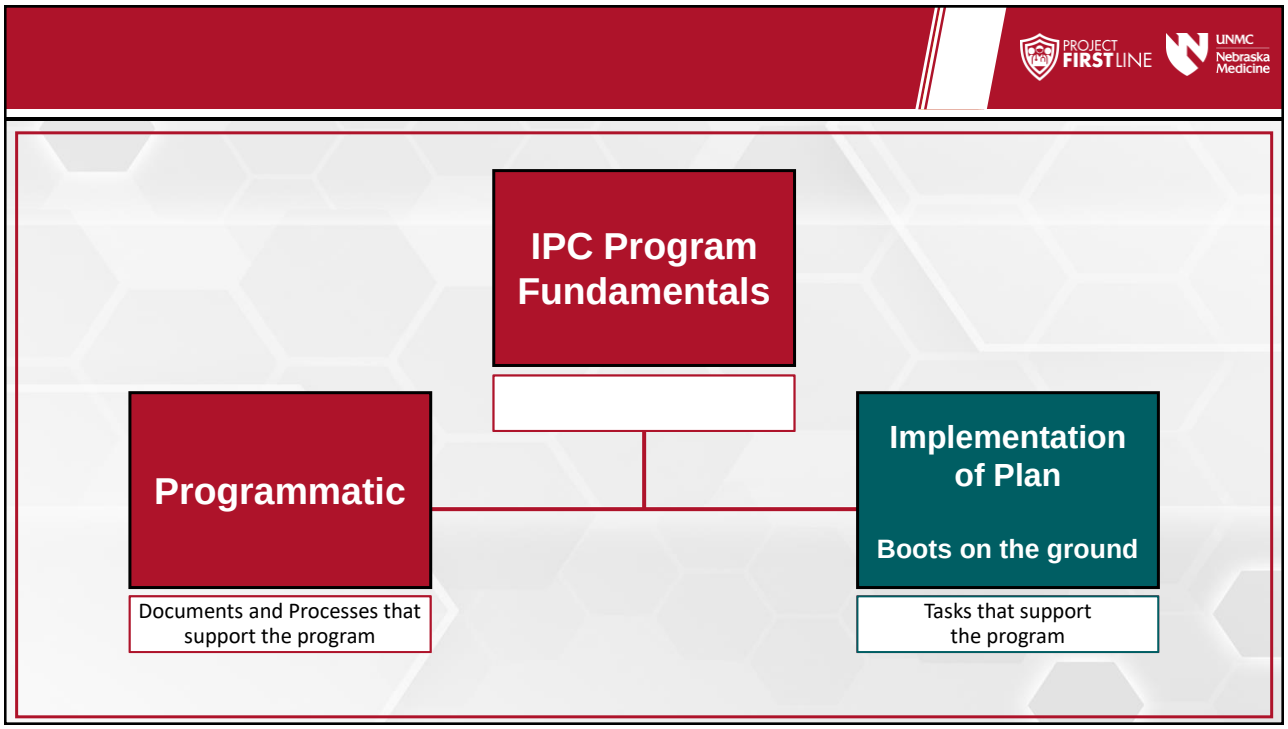
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IPC Program Fundamentals
Programmatic
Documents and Processes that support the program
Implementation of Plan
Boots on the ground
Tasks that support the program

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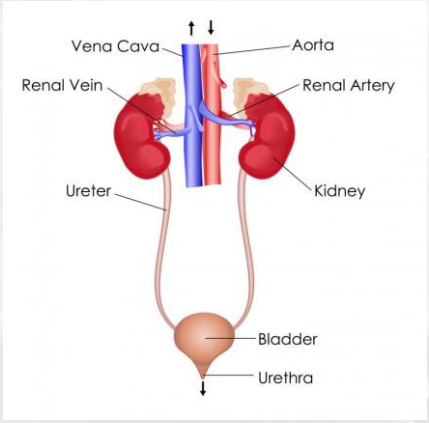
What is a CAUTI [7, 10]

Urinary Tract Infection (UTI)-

- An infection involving any part of the urinary system including urethra, bladder, ureters, and kidney

Catheter-associated Urinary Tract Infection (CAUTI)-

- UTI associated with an indwelling urinary catheter



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NHSN Urinary Catheter Definition[11]

- ***Indwelling Urinary Catheter (IUC)-*** A drainage tube that is inserted into the urinary bladder through the urethra
  - Left in place
  - Connected to a drainage bag.
- IUCs used for intermittent or continuous irrigation are also included in CAUTI surveillance
- Catheters NOT included in CAUTI surveillance include:
  - In and out catheters
  - External Catheters (Condom Caths)
  - Nephrostomy Tubes**
  - Ileoconduits**
  - Suprapubic Catheters**

*** Unless an IUC is also present*

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Burden of UTI[12]

Background

- UTIs are one of the most common HAIs
- Urinary catheters are one of the most common medical devices used in adults
- Daily risk of developing bacteriuria varies from 3-7% when the catheter remains in situ

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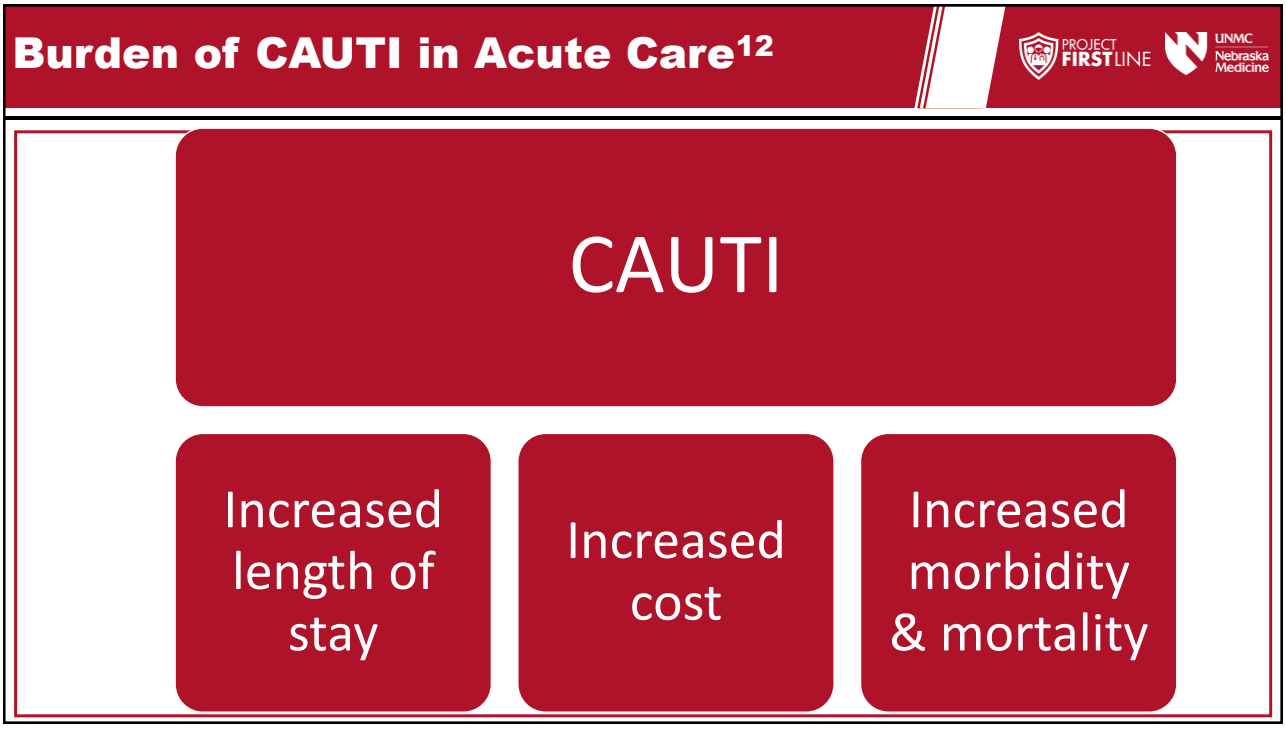
Burden of CAUTI in Acute Care[12]



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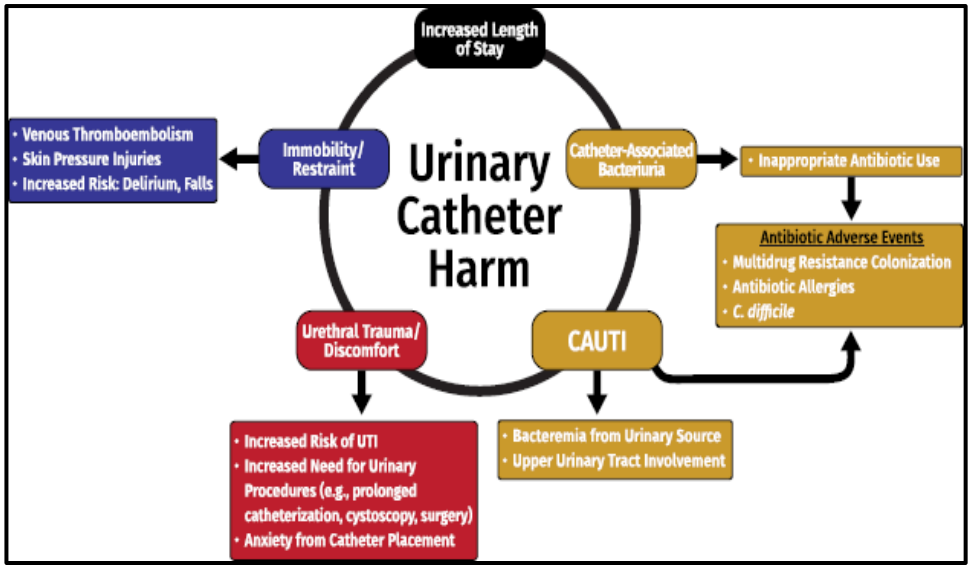
Catheter Harm[12]



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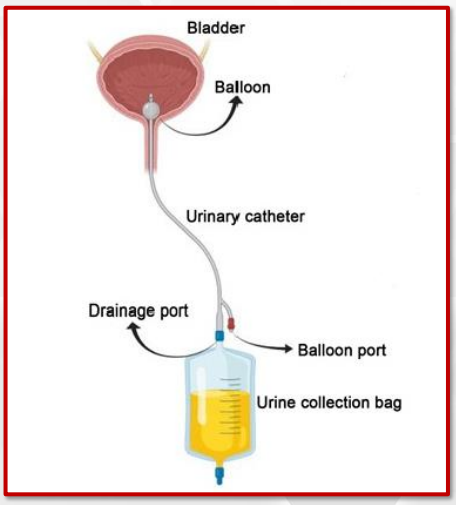
CAUTI Pathophysiology [3,9,11]

UTIs are bacterial or fungal infections of any part of the urinary system

- **Excluded Organisms:**
  - **Mixed flora**
  - **Candida**
  - **Dimorphic mold**

Spectrum of Severity

- Infectious
  - Bacteriuria with symptoms
  - Cystitis
  - Pyelonephritis
  - Sepsis
- Non-infectious
  - Asymptomatic bacteriuria



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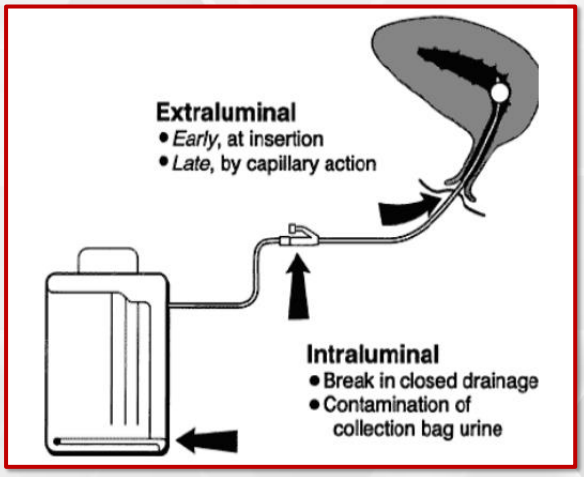
Catheter Contamination[10]

Transmission

- **Insertion**
- **Through Catheter Lumen**
- **External Catheter Surface**

Endogenous vs Exogenous



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CAUTI Risk Factors [3,8,9,10,]

Special Populations	Risk Factors
• Pregnancy • Elderly • Diabetics • ICU • Surgical Patients • Spinal Cord Injuries	• Duration of catheterization • Female • Elderly • Non-maintained closed system • Neutropenia • Renal Disease

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Indwelling Urinary Catheter Indication[10,12]

Appropriate

- Treatment of urinary retention or obstruction
- Perioperative urinary management
- Measurement of accurate I/O in critically ill patients
- Open sacral/perineal wound management
- End-of-life comfort
- Prolonged immobilization

Inappropriate

- Care convenience
- Routine patient comfort
- Prolonged postoperative duration without appropriate indication
- Obtaining urine culture if patient can independently void

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Alternatives to an Indwelling Catheter

External Catheters

- Female (e.g., Purewick)
- Male (e.g., Condom catheters)

Intermittent Catheterization

- Bladder Scanning
- In and Out/ Straight Catheterization

Incontinence Products

- Diapers, pads

Urinals

- Male and Female options
- Bedpans

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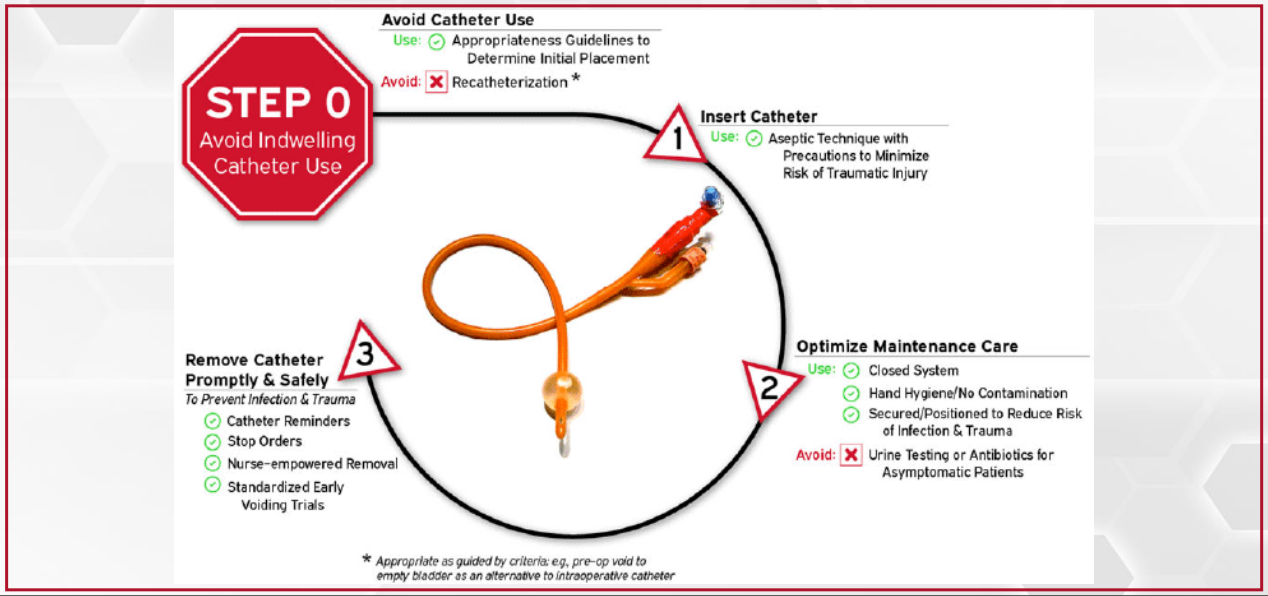
Indwelling Urinary Catheter Management[12]



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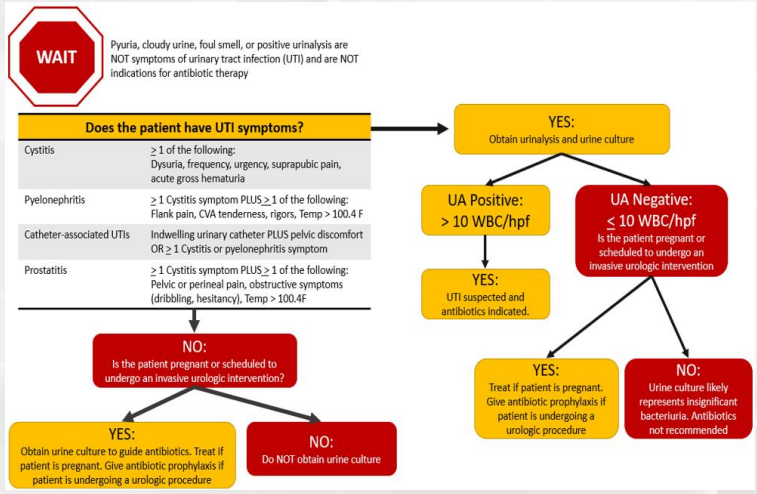
Testing for a UTI [8,10]

- Testing for UTIs is based on symptomology
- Common Signs and Symptoms
  - Fever
  - Costovertebral angle pain
  - Suprapubic tenderness
  - Urgency/frequency
  - Dysuria
  - Lower abdominal pain
  - Flank pain
- *Suspected UTIs are common cause of inappropriate antibiotic prescribing in the inpatient setting*



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Indications for Testing [8,10,12]

Appropriate

- Flank pain
- Acute hematuria
- New pelvic discomfort
- Fever
- Costovertebral angle tenderness
- Dysuria
- Altered mental status
- Rigors

Inappropriate

- Odorous, cloudy, discolored urine
- Reflex cultures without associated symptoms
- Culture to document response to antimicrobial therapy unless symptoms don't resolve

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Specimen Collection & Testing[15, 18]

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Specimen Collection

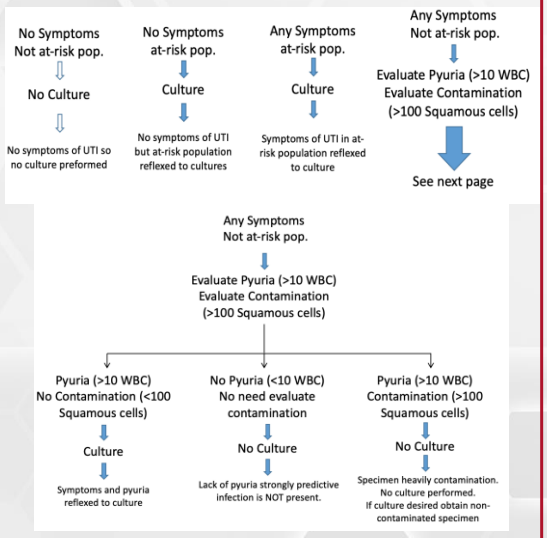
- Collected clean to minimize risk of contamination
  - E.g., perineal care, clean catch (midstream), aseptic via sampling port
- Place in sterile, rigid collection container and promptly transport to lab.
  - Refrigerate samples that can not be processed in <1 hr.

Urinalysis

- Distinguish between ASB & UTI
- Urinalysis with reflex to culture protocols

Culture

- Positive culture: >10^5 CFU/ml of at least one organism



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Common Pathogens [8,10,12,17]

- *E.coli*
- *Candida spp.*
- *Enterococcus spp.*
- *Pseudomonas aeruginosa*
- *Klebsiella pneumoniae*
- *Enterobacter spp.*

Excluded Organisms:

- *Candida spp.*
- Mixed Flora
- Dimorphic mold

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Contamination[15,17]

- **Recovery of 2+ species in a culture likely represents contamination:**
  - Inadequate patient preparation
  - Collection error
    - Improper aseptic technique
    - Non-sterile methods
  - Delay in transport
  - Delay in processing

Treatement for a UTI [8, 10]

Suspected UTIs are a common cause of inappropriate antibiotic prescribing in the inpatient setting

5 RIGHTS of Medication Administration

- ✓ **RIGHT Patient**
- ✓ **RIGHT Medication**
- ✓ **RIGHT Dose**
- ✓ **RIGHT Time**
- ✓ **RIGHT Route**

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The IPs Role in CAUTI Prevention

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IPs Role in CAUTI Oversight[5]

Centers for Medicare and Medicaid Services, State Operations Manual for Hospitals and Critical Access Hospitals:

The Infection Preventionist is responsible for the prevention and control of HAIs, including auditing of adherence to infection prevention and control policies and procedures by hospital personnel.

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IPC Program Oversight[10,12]

- **Partner with units and staff that insert and care for urinary catheters**
  - Provide Unit-specific incidence of CAUTI
  - Promotes a culture of ownership and safety
- **Partner in prevention strategies**
  - Non-catheter urinary management protocols and supplies
  - Insertion kits
  - Insertion & Maintence bundles
  - Removal protocols
  - Horizontal measures
- **Product Selection & Evaluation**
  - Must allow the IP to provide necessary input into decisions related to infection prevention
  - Product standardization throughout facility (insertion kits, catheter alternatives)

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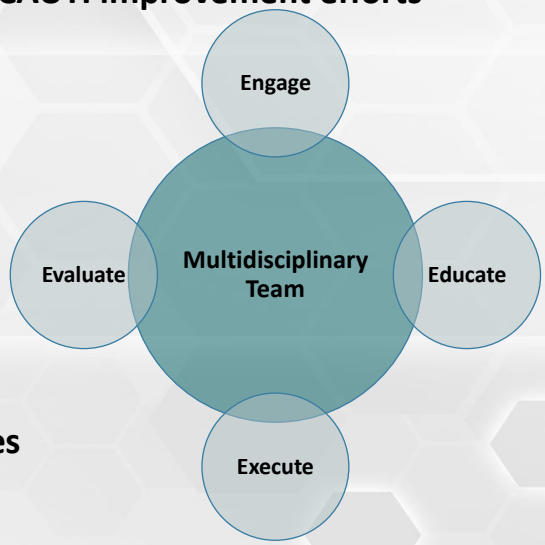
CAUTI Prevention Committees[12]

- **Internal, multidisciplinary team targeting CAUTI improvement efforts**
- **Quality improvement framework**
  - Systematic improvements
  - Standardize processes
  - Reduce variability
  - Achieve results
  - Improve outcome
- **Application of evidence-based guidelines**
- **Sustain the change**
- **CAUTI case review by missed opportunities**
  - e.g. prolonged duration



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Gap Analysis

- A GAP analysis compares the actual performance with the desired performance
- Can be applied at a system level or at a department level.
- GAP tool based upon national guidelines
  - Consider Quality of Evidence
  - Compare current practices to evidenced-based practices
- Prioritize by strength of evidence
- Rank order opportunities

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Quality of Evidence[12]

Category	Definition
HIGH	Highly confident that the true effect lies close to that of the estimated size and direction of the effect. Evidence is rated as high quality when there are a wide range of studies with no major limitations, there is little variation between studies, and the summary estimate has a narrow confidence interval.
MODERATE	The true effect is likely to be close to the estimated size and direction of the effect, but there is a possibility that it is substantially different. Evidence is rated as moderate quality when there are only a few studies and some have limitations but not major flaws, there is some variation between studies, and/or the confidence interval of the summary estimate is wide.
LOW	The true effect may be substantially different from the estimated size and direction of the effect. Evidence is rated as low quality when supporting studies have major flaws, there is important variation between studies, the confidence interval of the summary estimate is very wide, and/or there are no rigorous studies.

Prioritize process improvement efforts by focusing on recommendations categorized as 'high' quality of evidence

- These should be adopted by all acute care hospitals
- The potential to affect CLABSI risk outweighs the potential for undesirable effects

'Moderate' or 'Low' quality of evidence may be implemented by select patient populations, settings or unit-based interventions.

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CAUTI Targeted Assessment for Prevention (TAP)[5]

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I. General Infrastructure, Capacity, and Processes

1. Does your facility's senior leadership actively promote catheter-associated urinary tract infection (CAUTI) prevention?	☐ Yes ☐ No ☐ Unknown
2. Is unit-level leadership involved in CAUTI prevention?	☐ Yes ☐ No ☐ Unknown
3. Does your facility currently have a team/workgroup focusing on CAUTI prevention?	☐ Yes ☐ No ☐ Unknown
4. Does your facility have unit-based nurse champions for CAUTI prevention?	☐ Yes ☐ No ☐ Unknown
5. Does your facility have a physician champion for CAUTI prevention?	☐ Yes ☐ No ☐ Unknown
Comments: (Please specify question number as applicable)	

Training	
6. Is *training* on aseptic technique for urinary catheter **insertion** provided at least once per year for all personnel with this responsibility?	☐ Yes ☐ No ☐ Unknown
7. Is a *knowledge assessment* (e.g., quiz, test) on aseptic technique for urinary catheter **insertion** conducted at least once per year for all personnel with this responsibility?	☐ Yes ☐ No ☐ Unknown
8. Is a *skills assessment* (i.e., personnel demonstration of tasks) on aseptic technique for urinary catheter **insertion** conducted at least once per year for all personnel with this responsibility?	☐ Yes ☐ No ☐ Unknown
9. Is *training* on urinary catheter **maintenance** provided at least once per year for all personnel with this responsibility (e.g., aseptic emptying of drainage bag, maintaining a closed drainage system, maintaining unobstructed urine flow)?	☐ Yes ☐ No ☐ Unknown
10. Is a *knowledge assessment* (e.g., quiz, test) on urinary catheter **maintenance** conducted at least once per year for all personnel with this responsibility?	☐ Yes ☐ No ☐ Unknown
11. Is a *skills assessment* (i.e., personnel demonstration of tasks) on urinary catheter **maintenance** conducted at least once per year for all personnel with this responsiblity?	☐ Yes ☐ No ☐ Unknown
Comments: (Please specify question number as applicable)	

What is the Difference?

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Policy

- High-level, broad, general, concise
- Outlines organizations intent on a topic
- Provides a framework that can adapt to changes
- Guides decision making
- Ensures coordinated compliance with applicable laws and regulations

Procedure

- Specific, Detailed
- Specify how a task or process is carried out- step by step
- Step by step instructions to follow when completing a task
- Less flexible
- Standardize processes for consistency

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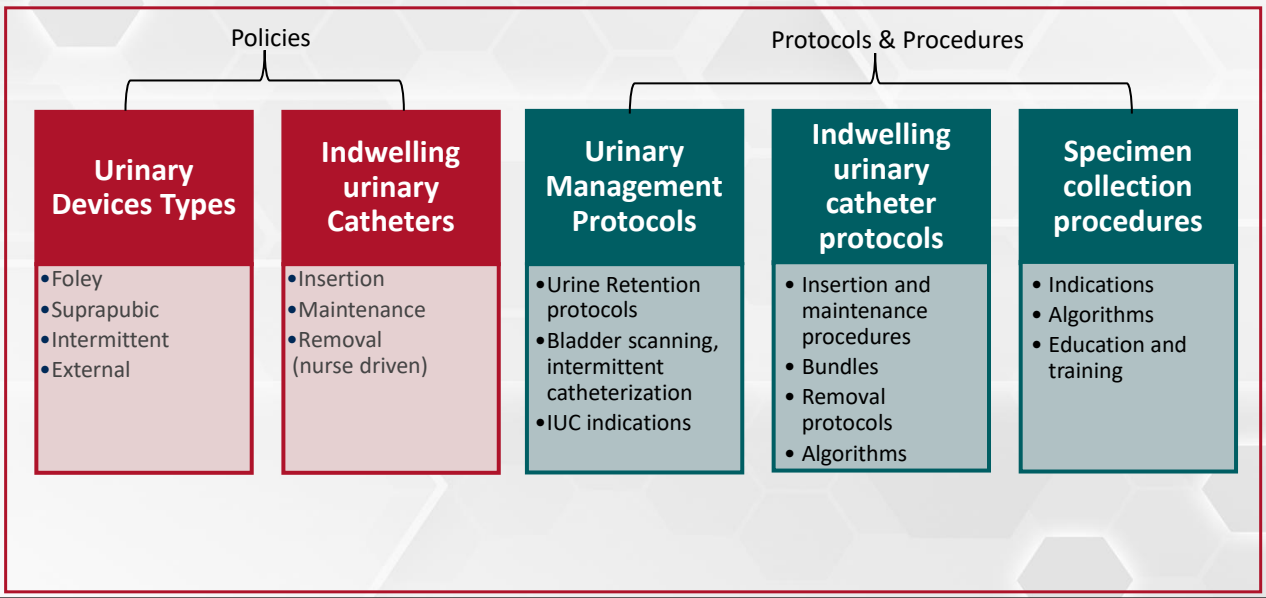
UTI & CAUTI Prevention Policies & Procedures[8]



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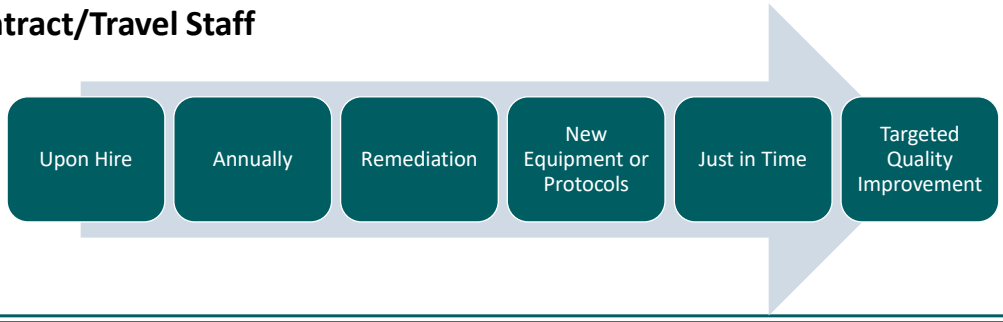
HCP Education & Training

- Educate HCP involved in catheter care on lifespan of urinary catheters
- Assess competency in all HCP roles who may interact with catheters
  - Nursing staff
  - Providers and APPs
  - Care Techs
  - Contract/Travel Staff



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HCP Education & Training[10,12]

Preparation
- Perineal Care
- Standard kits

Insertion
- Sterile technique
- Supply
- Insertion Bundle

Maintenance care
- Perineal care
- System maintenance
- Catheter system positioning

Removal protocol
- Per Provider Order vs
- Nurse-Driven removal
- STOP Orders

Urine Culture Stewardship
- Testing Algorithms
- Culture indications

Specimen collection
- Collection Procedures (e.g., clean catch, straight catch, via IUC, etc.)

Bladder Management Protocols
- Bladder scanning
- Toileting schedules
- Straight catheterization

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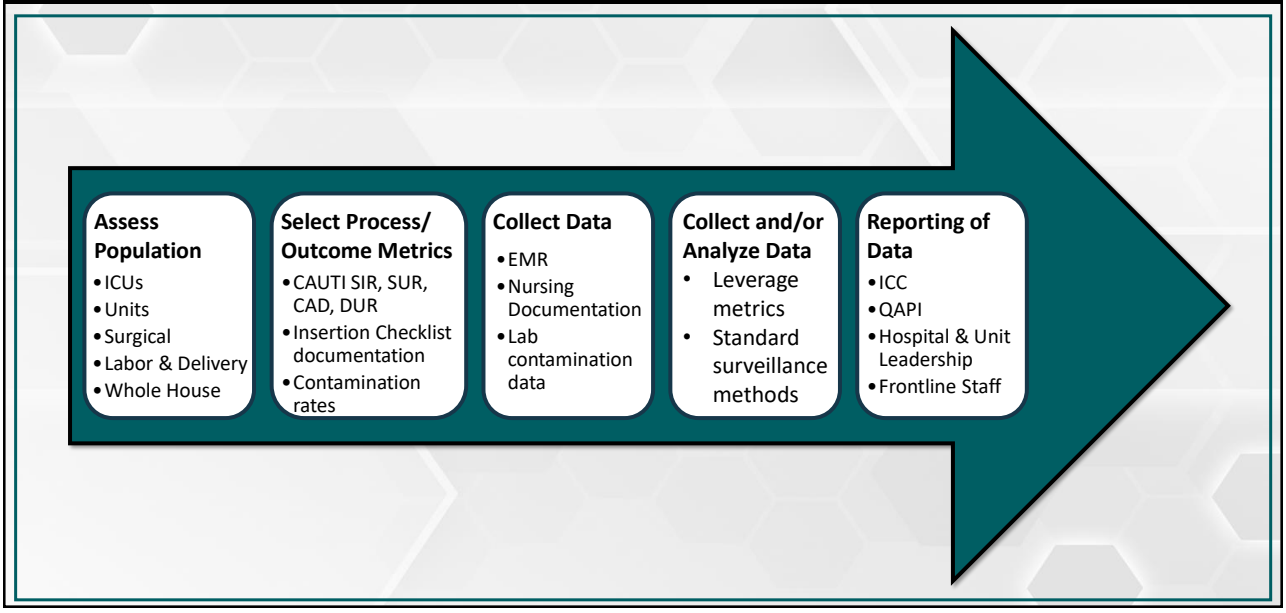
CAUTI Surveillance[11,12]



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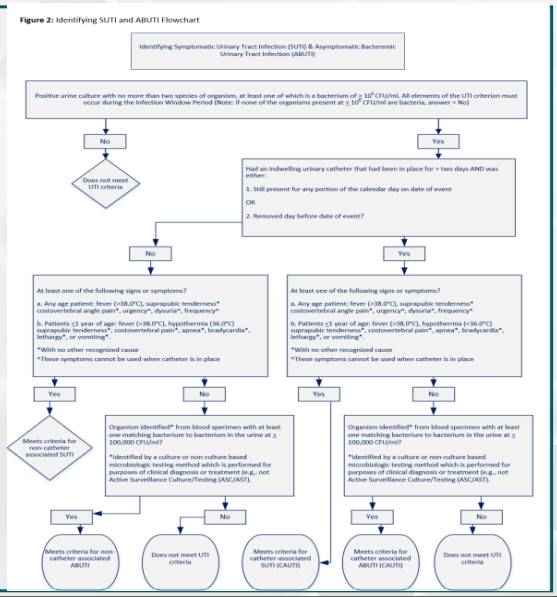
NHSN Surveillance Definition[11]

- *Utilize updated PSC Manual*

1. Positive culture is microbial growth of >10^5 CFU/ml
   - Excludes yeast and other fungi
2. IUC in place or removed the day before
3. Sign/Symptoms of Infection
4. Distinguish between:
   - Symptomatic UTI (SUTI)
   - Asymptomatic Bacteremia (ABUTI)
   - Contamination (excluded organisms)



Performance Monitoring[7]

Outcome

- CAUTI rates by ward
- CAUTI rates by hospital
- SIR, SUR, DUR
- CAUTI/1000 Days
- BSI Secondary to CAUTI/ 1000 catheter days

Process

- Bundle compliance
- Hand hygiene compliance
- Urine culture metrics

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Bundles[19]

- Grouping of evidence-based practices aimed at improving practice and decreasing HAI.
- Consistent application can lead to significant and sustained reductions in CAUTI rates.
- Bundles alone do not lead to improved practice
  - Bundle policy
    - Ongoing adherence monitoring
    - > 95% compliance

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Sample Bundle[14]

6-C CAUTI Prevention Bundle:

- Consider alternatives to IUCs
- Connect with a securement device
- Keep it Clean
- Keep it Closed
- Call for bladder scanning
- Culture only with clear indication

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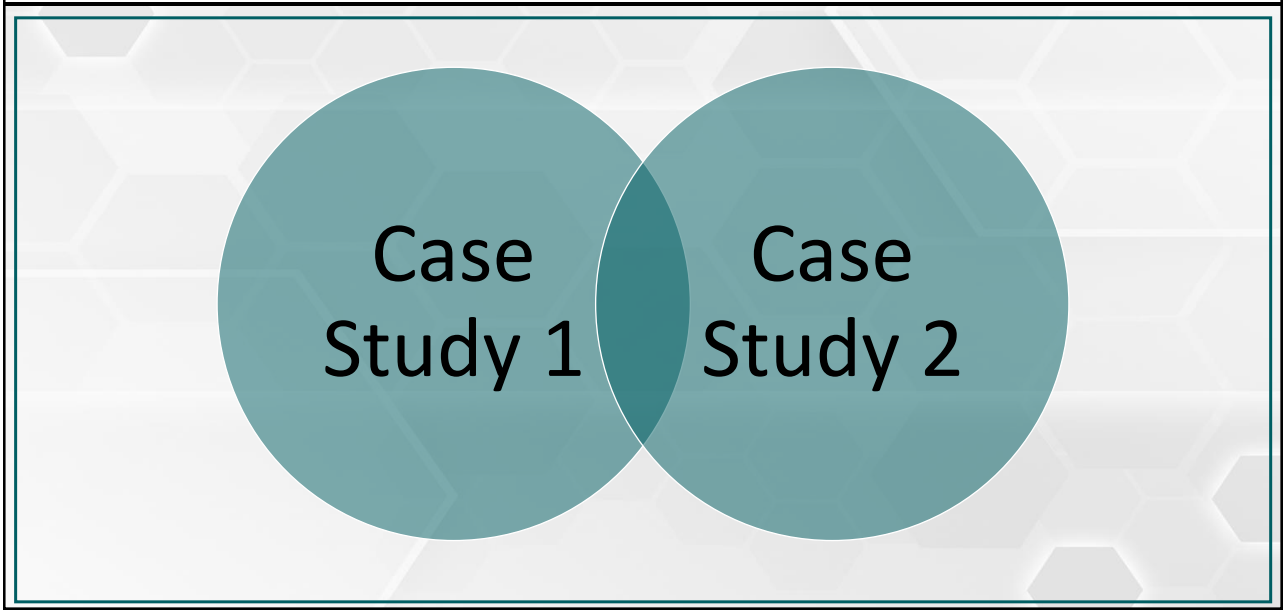
Sample Bundle[9]

CAUTI Maintenance Bundle

DATE	BUNDLE CRITERIA							
	DAILY DOCUMENTED ASSESSMENT OF NEED	TAMPER EVIDENT SEAL IS INTACT	CATHETER SECURED-SECUREMENT DEVICE IN PLACE	HAND HYGIENE PERFORMED FOR PATIENT CONTACT	DAILY MEATAL HYGIENE PERFORMED WITH SOAP AND WATER	DRAINAGE BAG EMPTIED USING A CLEAN CONTAINER	UNOBSTRUCTED FLOW MAINTAINED	ACTION REMOVE OR CONTINUE
	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	REMOVE CONTINUE
	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	REMOVE CONTINUE
	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	REMOVE CONTINUE
	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	REMOVE CONTINUE
	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	REMOVE CONTINUE
	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	REMOVE CONTINUE

Sample Bundle[9]



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Case Studies

Case Study 1	Preparing for upcoming CAUTI Prevention Committee Meeting.
Infection Preventionist utilizes GAP tool for improvement efforts	Meeting objective to perform a GAP analysis utilizing TAP to identify areas of opportunity
	IP Review of recent NHSN data
	- Facility SIR 1.21, Facility SUR 1.6 - Unit 1 SIR 1.25, SUR 1.6 - Unit 2 SIR 1.7 SUR 1.5

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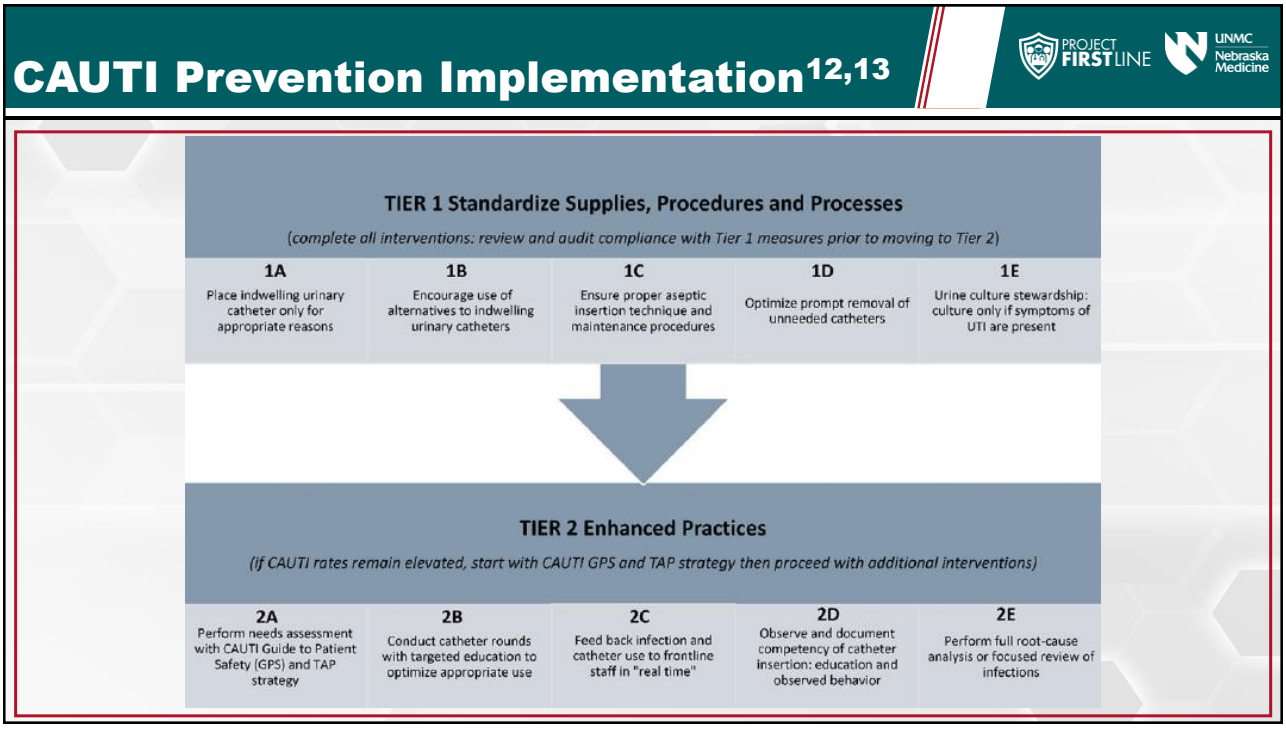
CAUTI Prevention Implementation[12,13]



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Case Study 1

	Unit 1	Unit 2
Type of Unit	Surgical Unit	Neurology Unit
SIR	1.25	1.7
SUR	1.6	1.5
CAD	2.5	3.7
Key Findings from TAP	• IUCs remain in place post procedure without appropriate orders • Inconsistent IUC indications documented • No nurse-driven removal protocol in place	• IUCs utilized without appropriate indications • Inconsistent application of facility urinary management protocol • Inconsistent supply on IUC alternatives
Opportunities	• IUC indications • STOP Orders • Establish Nurse-driven removal protocol	• IUC Indications • Bladder Scanning and urinary management protocol • Ensure supply of IUC alternatives
Strategy	To be determined	To be determined

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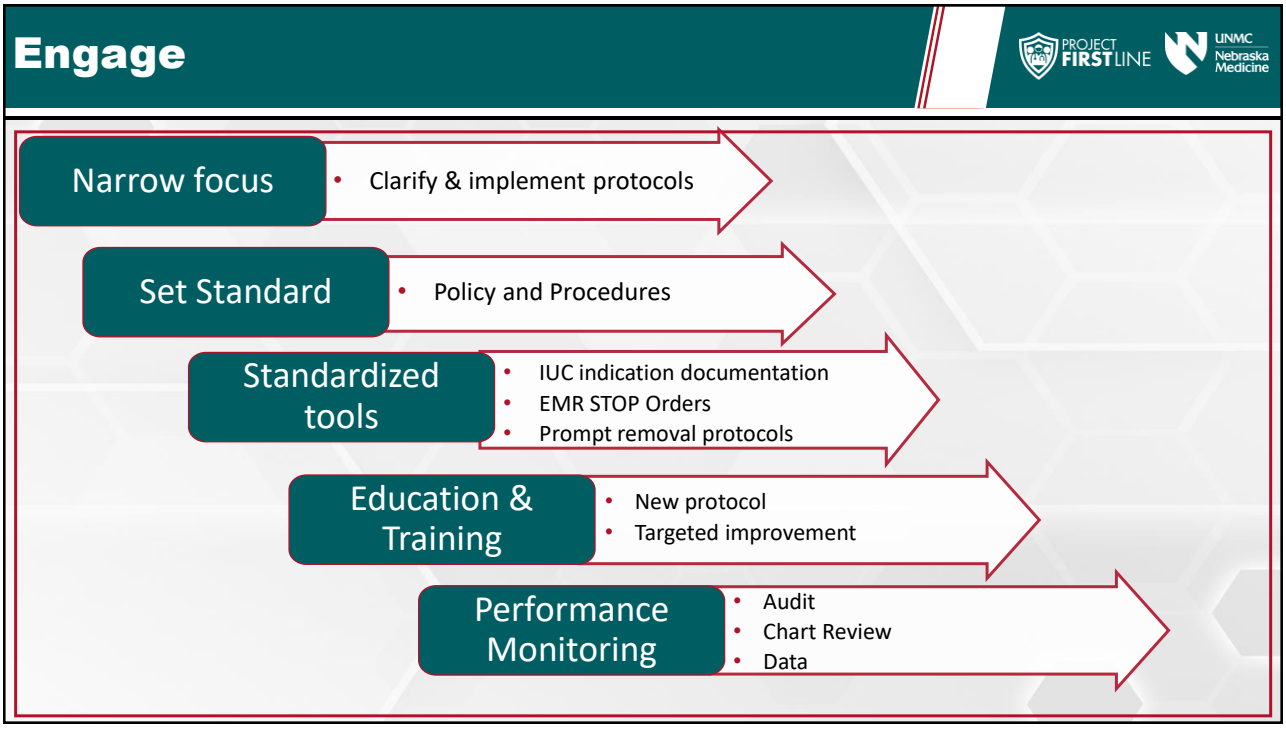
Engage


Narrow focus
Clarify & implement protocols
Set Standard
Policy and Procedures
Standardized tools
IUC indication documentation
EMR STOP Orders
Prompt removal protocols
Education & Training
New protocol
Targeted improvement
Performance Monitoring
Audit
Chart Review
Data

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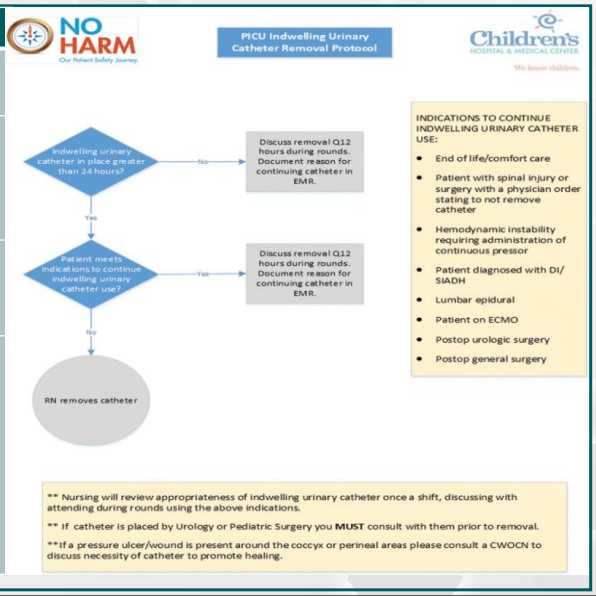
Case Study 1

	Unit 1
Type of Unit	Surgical Unit
Key Findings from TAP	• IUCs remain in place post procedure without appropriate orders • Inconsistent IUC indications documented • No nurse-driven removal protocol in place
Opportunities	• IUC indications • STOP Orders • Establish Nurse-driven removal protocol
Strategy	• Education and Monitoring of IUC indication documentation • Partner with the PACU to remove devices before transfer to the unit • Leverage EMR to establish STOP orders of IUC without appropriate indication • Develop and educate nursing staff on nurse-driven removal protocol



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Case Study 1

	Unit 2
Type of Unit	Neurology Unit
Key Findings from TAP	• IUCs utilized without appropriate indications • Inconsistent application of facility urinary management protocol • Inconsistent supply on IUC alternatives
Opportunities	• IUC Indications and documentation • Bladder Scanning and urinary management protocol • Ensure supply of IUC alternatives
Strategy	• Education and Monitoring of IUC indication documentation • Educate staff on hospital protocol for urinary management with particular focus on bladder scanning • Partnering with patient supply department to ensure adequate stocking of chux pads, male/female urinals, and external catheters. • New bladder scanner for unit

Appendix 1 - URINARY CATHETER POCKET CARD

PREVENT CATHETER-ASSOCIATED URINARY TRACT INFECTION (CAUTI)

Foley catheters can cause:

- ↑ **Infections**
- ↑ **Length of Stay**
- ↑ **Cost**
- ↑ **Patient Discomfort**
- ↑ **Antibiotic Use**
- ↑ **Trauma**
- ↑ **Delirium**

Urinary Catheters confine patients to bed, making them more immobile and thus increasing their risk for skin breakdown.

PREVENTION IS KEY.

DISCONTINUE OR OBTAIN ORDERS TO
DISCONTINUE UNNECESSARY URINARY CATHETER!

REMOVE THAT URINARY CATHETER!

Foley Catheters ***are*** indicated for:

1. Acute urinary retention or obstruction
2. Urologic/Pelvic surgery
3. Hematuria
4. Wound healing (stage III or IV) in incontinent patient
5. Neurogenic bladder
6. Hospice/comfort/palliative care
7. Required immobilization for trauma or surgery
8. Chronic indwelling urinary catheter on admission
9. Accurate measurement of urinary output in the critically ill patients (Intensive Care & Intermediate Unit)

Foley Catheters are ***not*** indicated for:

- Urine output monitoring OUTSIDE ICU/IU
- Incontinence (consider external options)
- Prolonged postoperative use
- Patients transferred from intensive care to general units
- Morbid obesity
- Immobility (turn patient q 2 hours, up in chair)
- Confusion or dementia
- Patient request

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Case Studies

Case Study 2 *How to monitor CAUTI performance without a calculated metric from NHSN*	IP in a Critical Access Hospital
	Reviewing data from NHSN
	No calculated metrics because the expected infections and IUCs are < 1
	Reports that staff struggle with CAUTI due to lack of frequency and complex nature of interactions

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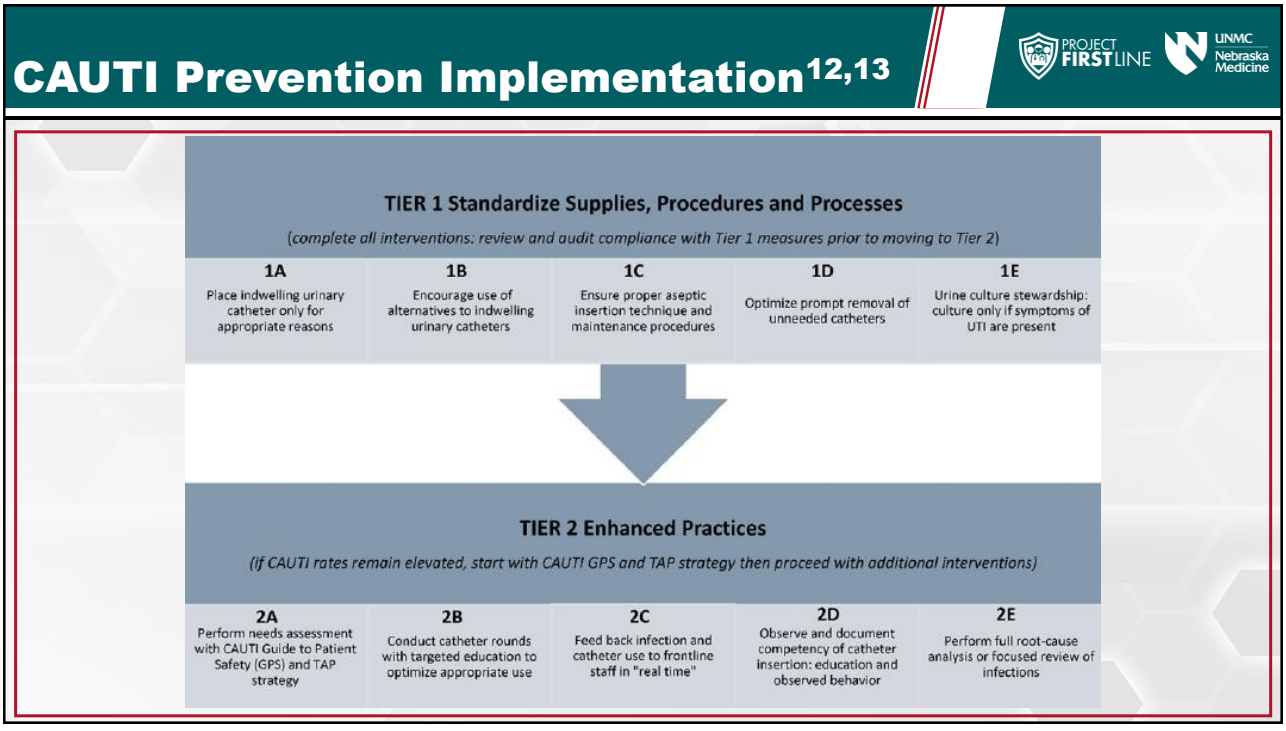
CAUTI Prevention Implementation[12,13]



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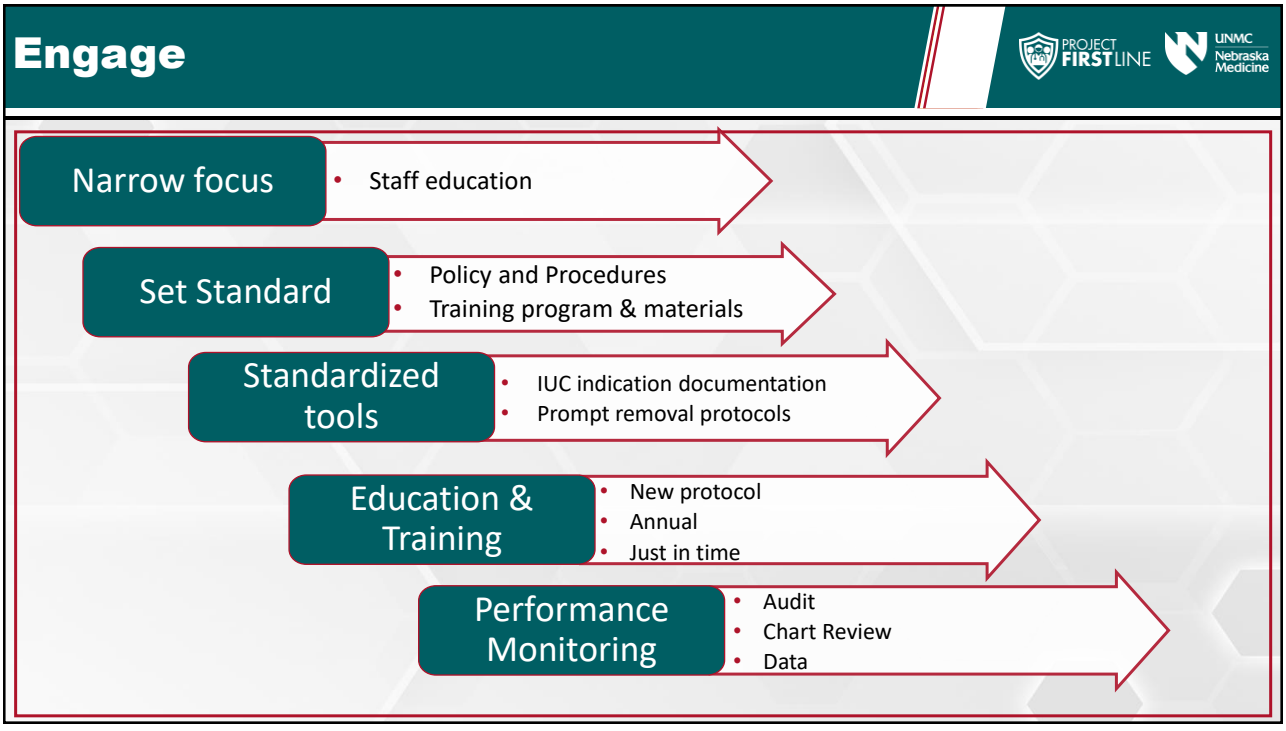
Engage


Narrow focus
Staff education
Set Standard
Policy and Procedures
Training program & materials
Standardized tools
IUC indication documentation
Prompt removal protocols
Education & Training
New protocol
Annual
Just in time
Performance Monitoring
Audit
Chart Review
Data

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Performance Monitoring

CAUTI Surveillance for the IPC Program	
	Tracking device days
	Tracking CAUTI infection rates
	Indication documentation compliance
	Indication appropriateness compliance
	Catheter care maintenance audit compliance
	Culture/Contamination metrics
	Hand hygiene compliance
	CHG compliance

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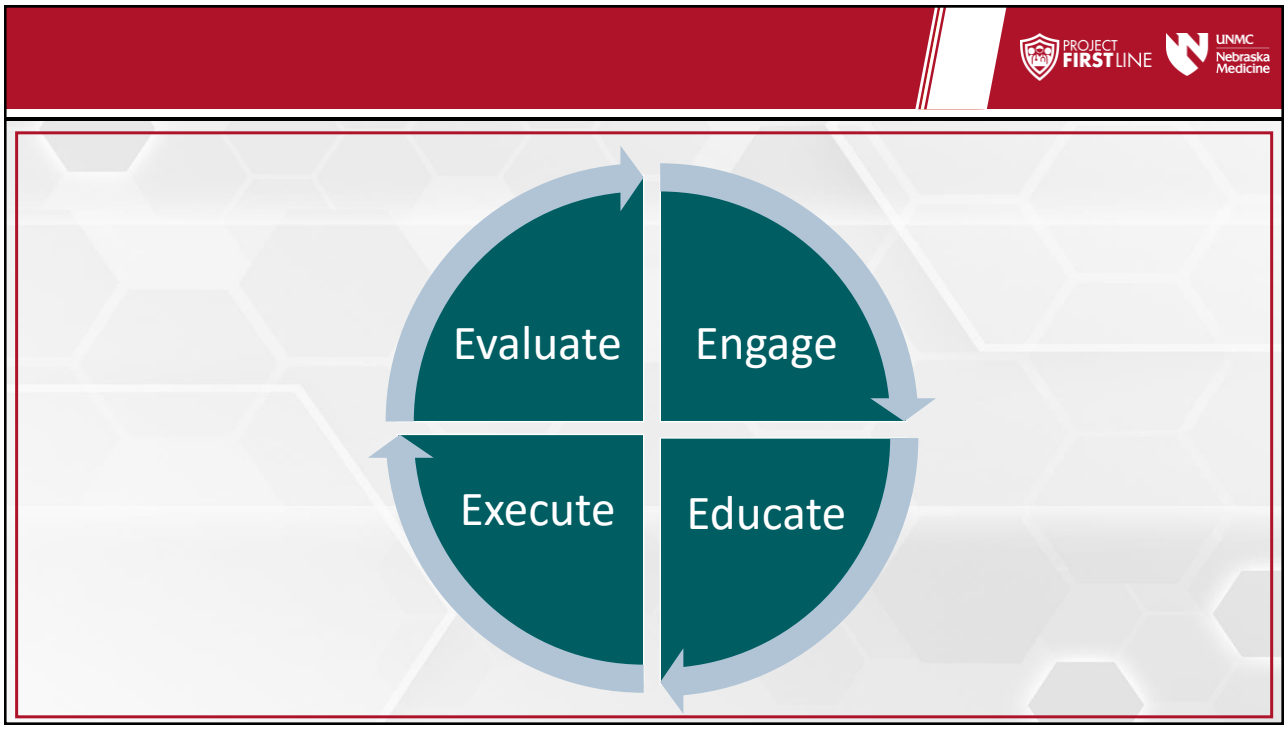
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UNMC Nebraska Medicine
Evaluate
Engage
Execute
Educate

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PROJECT FIRSTLINE

UNMC Nebraska Medicine

Join us next month for a deeper dive into IPC Surveillance Programs

May 16th, 2024

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Questions

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Office Hours

- If you have a questions
  - Raise hand and our admin will take you off mute OR
  - Enter your question into the chat
- If you have additional questions that are not answered, you can email us at ipslice.nebraskamed.com

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