Performance Improvement Plan:

Catheter-Associated Urinary Tract Infection Rates

at Holmes Regional Medical Center

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Health First, Holmes Regional Medical Center

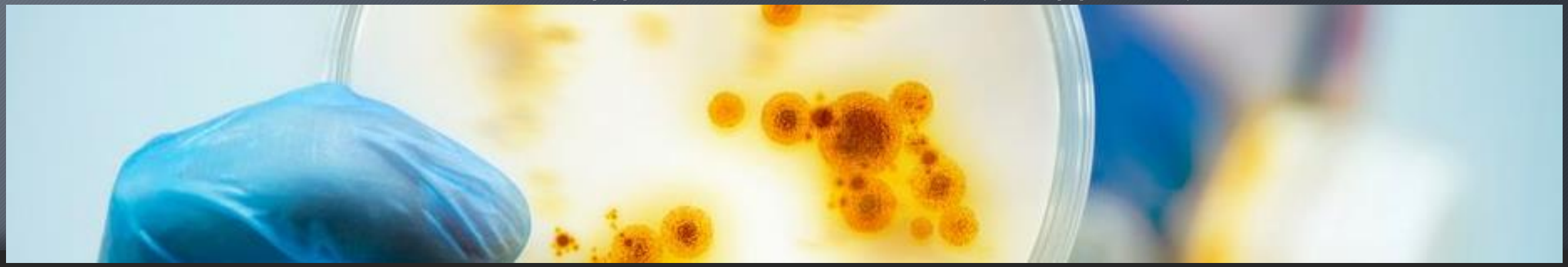
Significance of CAUTI

Accounts for 32% of all healthcare-acquired infections (HAIs).

Every day a catheter is in place, risk for CAUTI increases 3% to 7%.

Approximately 15% to 25% of patients receive indwelling catheters during hospitalization.

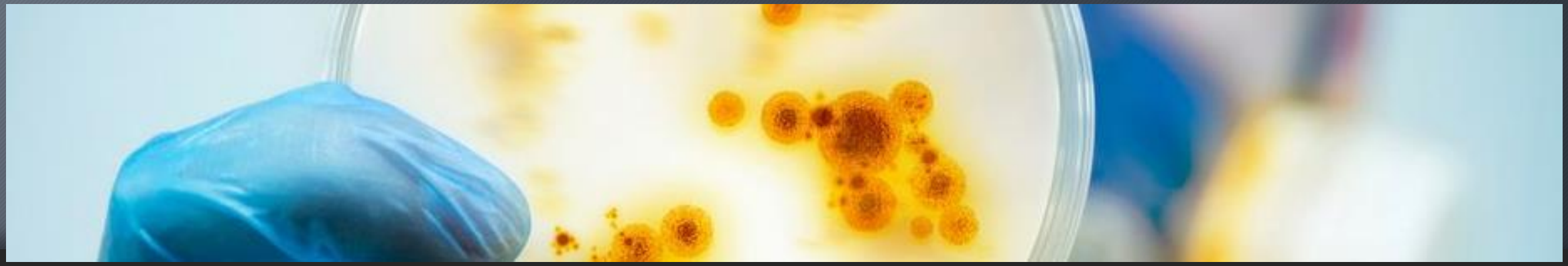
(Centers for Disease Control and Prevention [CDC], 2018; Hooton et al., 2010; Institute for Healthcare Improvement [IHI], n.d.a; Kennedy, Greene, & Saint, 2013; Lo et al., 2014; McGuckin, 2012)



Significance of CAUTI

- Mortality estimated between 10% to 15%.
- Causes significant comorbidities of systemic infections.
- Increases length of stay (LOS) by two to four days and is considered medical error that can result in temporary or permanent harm.
- Per-patient treatment costs are $911 to $3,824 for CAUTI and sequela.

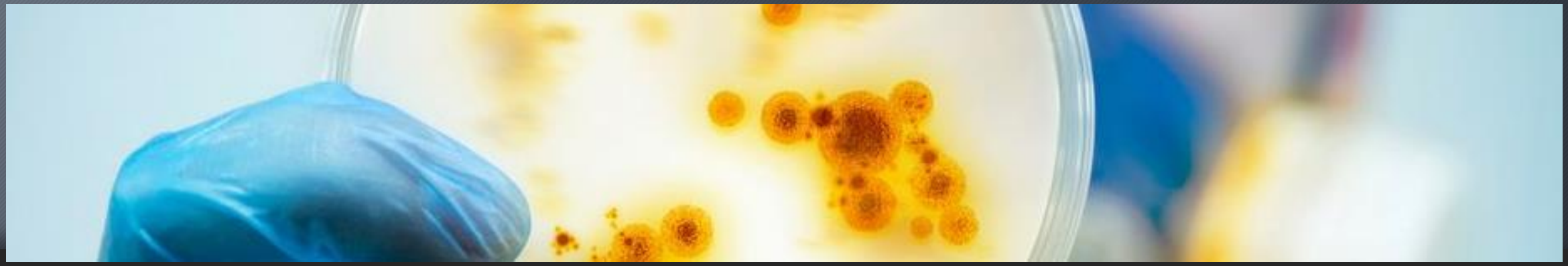
(Centers for Disease Control and Prevention [CDC], 2018; Hooton et al., 2010; Institute for Healthcare Improvement [IHI], n.d.a; Kennedy, Greene, & Saint, 2013; Lo et al., 2014; McGuckin, 2012)



Significance of CAUTI

- National cost is half a billion dollars annually (2018).
- Contributes to excessive antimicrobial use.
- Centers for Medicare and Medicaid Services (CMS) denies reimbursement for HAI CAUTI.

(AHRQ, 2018; CDC, 2009; CDC, 2016 CDC, 2018; Department of Health and Human Services [HHS], 2010; ODPHP, 2016)



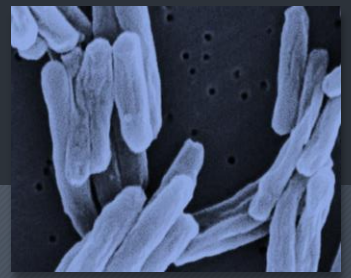
CAUTI Risk Factors

- Prolonged catheterization
- Disconnection of drainage system
- Less training for inserting professional
- Placing catheters outside operating rooms
- Incontinence
- Female gender of patient
- Patient of older age
- Impaired immunity

(AHRQ, 2018; CDC, 2009; CDC, 2016 CDC, 2018; Department of Health and Human Services [HHS], 2010; ODPHP, 2016)

REMOVE FOLEYS TO PREVENT CAUTI

Strategies & Practices for CAUTI Prevention



Strategies & Practices

CAUTI Prevention

- Targeted Assessment for Prevention (TAP) facility assessment from the CDC.
- Agency for Healthcare Research and Quality (AHRQ) prevention toolkit.
- Road Map to Elimination action plan in 2015 from Office of Disease Prevention and Health Promotion (ODPHP).

(AHRQ, 2018; CDC, 2009; CDC, 2016 CDC, 2018; Department of Health and Human Services [HHS], 2010; ODPHP, 2016)

Identification of related QSEN Competencies

QSEN Competencies

CAUTI prevention involves

- Staff education
- Catheter insertion using aseptic techniques
- Monitoring of CAUTI incidence
- Maintain unobstructed urine flow
- Catheter care
- Prompt removal

QSEN competencies required during the process of CAUTI prevention

- Teamwork and Collaboration
- Evidence-Based Practice
- Quality Improvement

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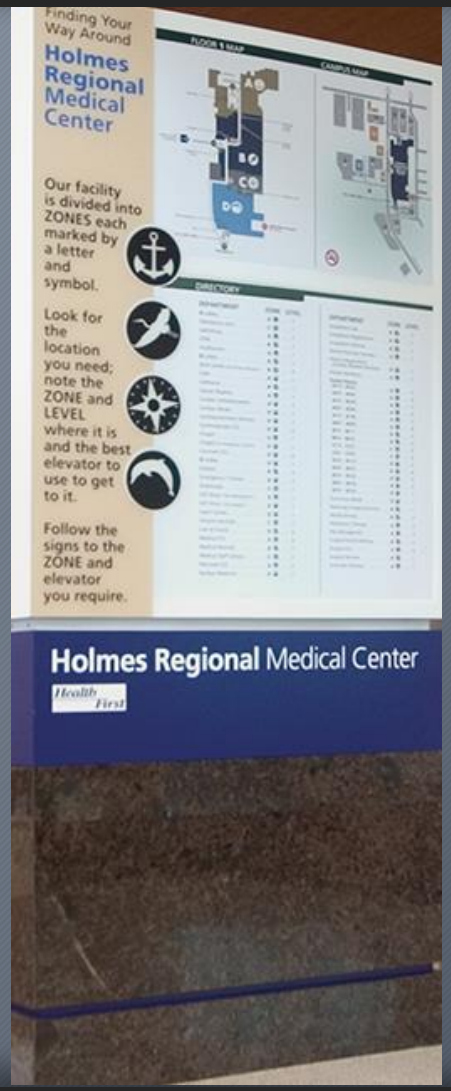
Baseline Data



- 23 CAUTIs between January and December 2016 for 7,222 inpatient days
- 11 CAUTIs between April 2016 and March 2017 for 7,057 catheter days
- HRMC assigned standardized infection ratio (SIR) of 1.505 – 1.528.

204% worse than national CAUTI rates.

50% worse than national average.

The benchmark is 1.

(Consumer Reports, 2017; Health First [HF], 2013; HF, 2014; HF, 2015; Leap Frog Group, 2017; Medicare.gov, n.d.; Medicare.gov, 2017; NHSN, 2017)

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Baseline Data

- The SIR value is risk-adjusted and computed against predicted infection rates based on facility size and acuity.
- HRMC's predicted CAUTI rate should be 7.311 for a SIR of 1.
- Predicted CAUTI rate should be 5.4 for SIR of 0.75 (2020 goal).
- Most CAUTI-associated HF internal documents and policies have not been updated in three to five years.

(Consumer Reports, 2017; Health First [HF], 2013; HF, 2014; HF, 2015; Leap Frog Group, 2017; Medicare.gov, n.d.; Medicare.gov, 2017; NHSN, 2017)

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Stakeholders in CAUTI Improvements

Health First

In realizing its mission of excellent and compassionate care, and values of integrity, accountability, and excellence.

Holmes Regional Medical Center

Will realize savings in lower infection rates and improved Medicare scores. Improved scores will lead to improved revenue (reduced economic loss) and hospital reputation.

Reduced costs of Foley catheter purchases and non-reimbursed HAIs.

Medical & Nursing Leadership

Will be required to sign off policy modifications and approve updates. Ongoing tasks will be rolled into duties. Permission to initiate project will be obtained from leadership.

(CDC, 2016; IHI, 2011; Medicare.gov, 2017)

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Stakeholders in CAUTI Improvements

Unit Staff — Will complete clinical competencies and collaborate to reduce unnecessary catheterizations. Improved knowledge base reduces overall infection rates.

Nursing Staff — Save time caring for patients with CAUTIs and sequela, and who will require additional education time annually.

Patients & Families — Who are better educated about their Foley catheters, measurable in HCAHPS scores and overall satisfaction/compliance.

Community — Benefits from reduced HAI risk.

(CDC, 2016; IHI, 2011; Medicare.gov, 2017)

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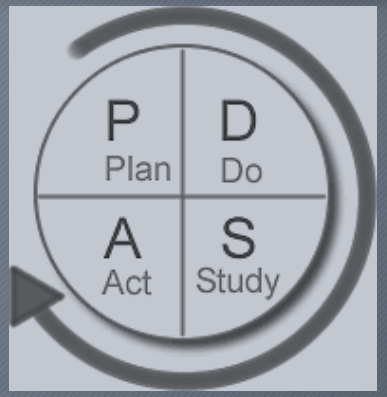
Implementation



Utilize a Plan – Do – Study – Act (PDSA) model to develop plans, carry out testing of new strategy, study results during a 12-month period, and act on the results to modify or improve methods to reduce CAUTI.

CAUTI championship opportunity for one BSN-RN per unit to complete requirements for BSN pay.

Non-financial buy-in:

- Following policy as a basic employment requirement.
- Annual education completed by July 31 annually.

(CatheterOut.org, n.d.; CDC, 2016; IHI, 2011; Spath & Kelly, 2017)

Health First

Improvement Goals

National goal is to reduce CAUTI rates from 2015 to 2020 by 25%. Goals for HRMC:

- Reduce SIR from 1.505/1.528 to 0.75 by 2020.
- Reduction of CAUTI rates by 50% to 75% by March 31, 2019.
- Mean objective of 5.4 to 7.3 CAUTIs = average of 6 CAUTIs from April 2018 through March 2019.

- Boost nurse-driven protocols and education. Re-educate associates about CAUTI.
- Update checklists and infection control policies and enhance 24-hour post-operational catheter removal.
- Apply most recent evidence-based practice principles to policies and education.

- Implement CAUTI prevention team of physical therapists, operating room nurses, surgeons, hospitalists, leadership physicians and leadership nurses.
- Achieve 100% completion rate of CAUTI bundle checklist via monthly audits starting June 2018.

(CDC, 2015; CDC, 2016; CDC, 2018; Consumer Reports, 2017; HF, 2013; IHI, n.d.a.; Medicare.gov, 2017; NHSN, 2017; ODPHP, 2016; Smith, 2015)

Project Timeframe

June - July

- Education, policy and purchasing changes
- Create inservices/ flyers

August

- Advertise inservices for all units

September

- Begin leadership audits; submit to CAUTI teams. All-shift inservices for all HRMC units by nurse educators.

October

P-D-S-A

- Nurse managers garner feedback

Annually

- Report to **CMS**

(AllegroMedical, n.d.; Cascade, n.d.; Glassdoor, 2018; Groves, 2012; Kennedy et al., 2013; Medicoshc, n.d.; Phelan, Daniels, & Hewitt, 1999; Ribeiro, Vieira, & Cunha, 2014; Salary.com, 2018; Shah, Schwartz, Luna, & Cullen, 2016)

Design Implementations

Policy Updates: Patient Hygiene

CP 2.00: Bathing: Single-use of basins, or utilize disposable plastic liners in basins

- Cost-effective analysis to determine less costly and more effective solution(s).
- Liners are relatively new and require research to determine effectiveness.

CP 2.27 and 2.37 update: Utilize chlorhexidine gluconate (CHG)

- CHG wipes, at a minimum on the perineum when tolerated and appropriate Q 24 hours.
  - Proper wipe disposal.
  - Continue using soap and water for routine dirt, blood, and heavy soiling.

CP 2.27 update: Specific instruction to cleanse the indwelling catheter

- Use CHG wipe or fresh washcloth with warm water and soap to cleanse with nondominant, clean-gloved hand from meatus outward in twisting motion three times and replace foreskin if appropriate.

(American Association of Critical Care Nurses, 2013; CDC, 2016; Denny & Munro, 2017; El-Soussi & Asfour, 2016; HF, 2017b; HF, 2017c; Huang, Chen, & Wang, 2016; Martin et al., 2017; Musuuza, Roberts, Carayon, & Safdar, 2017; Potter, Perry, Stockert, & Hall, 2013; Strouse, 2015; Swan et al., 2016)

Design Implementations

Policy Updates: Indwelling Foleys

CP 2.33: Assessments for ongoing Foley need

- Modify to specifically state “per shift” documentation of ongoing indwelling catheter need.

CP 2.33 & CAUTI bundle: Clarification for qualifying wounds

- Remove “full thickness wound healing” as clinical indicator for need and instead specify stage three and four pressure ulcer and perineal ulcer wounds.

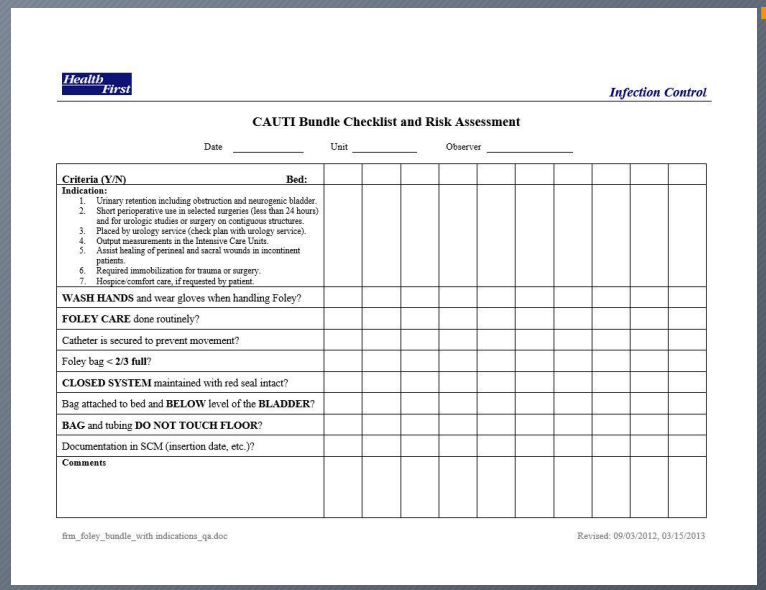
CP 2.24 update: Increased evaluations

- Modify to state patients with indwelling catheters should be evaluated for need every 12 hours (per shift) and on unit transfer or status change.

(CDC, 2016; HF, 2013; HF, 2016b; HF, 2016c; HF, 2017c; IHI, n.d.b.; IHI, 2011; Schuur, Chambers, & Hou, 2014)

Design Implementations

CAUTI Bundle



Health First — Infection Control

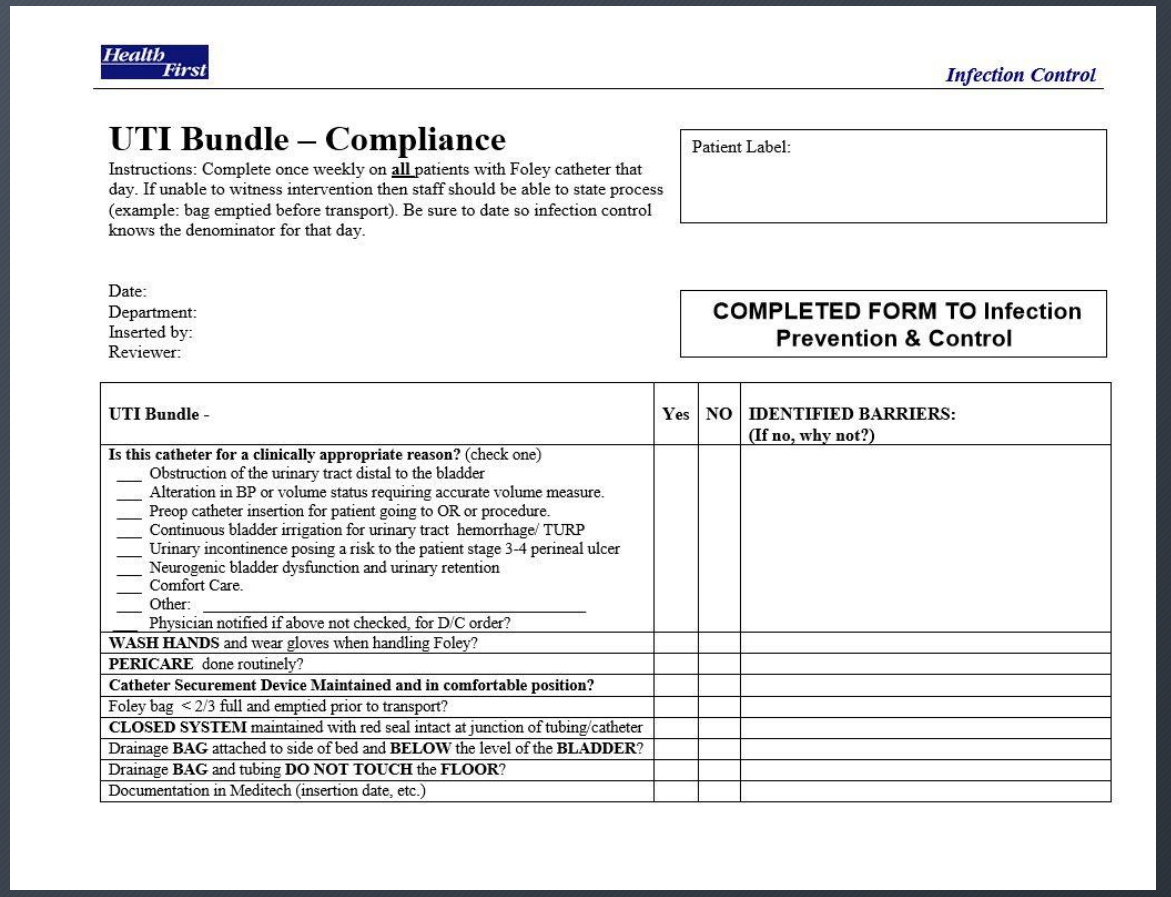
CAUTI Bundle Checklist and Risk Assessment

Date _____ Unit _____ Observer _____

Criteria (Y/N) Bed:										
Indication: 1. Urinary retention including obstruction and neurogenic bladder. 2. Short perioperative use in selected surgeries (less than 24 hours) and for urologic studies or surgery on contiguous structures. 3. Placed by urology service (check plan with urology service). 4. Output measurements in the Intensive Care Units. 5. Assist healing of perineal and sacral wounds in incontinent patients. 6. Required immobilization for trauma or surgery. 7. Hospice/comfort care, if requested by patient.										
WASH HANDS and wear gloves when handling Foley?										
FOLEY CARE done routinely?										
Catheter is secured to prevent movement?										
Foley bag < **2/3 full**?										
CLOSED SYSTEM maintained with red seal intact?										
Bag attached to bed and **BELOW** level of the **BLADDER**?										
BAG and tubing **DO NOT TOUCH FLOOR**?										
Documentation in SCM (insertion date, etc.)?										
Comments										

frm_foley_bundle_with indications_qa.doc Revised: 09/03/2012, 03/15/2013

- Avoid unnecessary urinary/Foley catheterizations
- Insert urinary catheter using aseptic technique
- Maintain urinary catheter only on patients who meet guidelines
- Reassess need for urinary catheter each shift



Health First — Infection Control

UTI Bundle – Compliance

Instructions: Complete once weekly on **all** patients with Foley catheter that day. If unable to witness intervention then staff should be able to state process (example: bag emptied before transport). Be sure to date so infection control knows the denominator for that day.

Patient Label:

Date:
Department:
Inserted by:
Reviewer:

COMPLETED FORM TO Infection Prevention & Control

UTI Bundle -	**Yes**	**NO**	**IDENTIFIED BARRIERS: (If no, why not?)**
Is this catheter for a clinically appropriate reason? (check one) ___ Obstruction of the urinary tract distal to the bladder ___ Alteration in BP or volume status requiring accurate volume measure. ___ Preop catheter insertion for patient going to OR or procedure. ___ Continuous bladder irrigation for urinary tract hemorrhage/ TURP ___ Urinary incontinence posing a risk to the patient stage 3-4 perineal ulcer ___ Neurogenic bladder dysfunction and urinary retention ___ Comfort Care. ___ Other: _____ ___ Physician notified if above not checked, for D/C order?			
WASH HANDS and wear gloves when handling Foley?			
PERICARE done routinely?			
Catheter Securement Device Maintained and in comfortable position?			
Foley bag < 2/3 full and emptied prior to transport?			
CLOSED SYSTEM maintained with red seal intact at junction of tubing/catheter			
Drainage **BAG** attached to side of bed and **BELOW** the level of the **BLADDER**?			
Drainage **BAG** and tubing **DO NOT TOUCH** the **FLOOR**?			
Documentation in Meditech (insertion date, etc.)			

Design Implementations

Policy Updates: CP 2.27

- Require ordering providers to document ongoing need and initiate audits by leadership team for 100% compliance by July 31, 2018.
- Require emergency department (ED) catheters to be preceded by order from attending with same indications as other inpatient circumstances.
- Under “Procedure” heading: Change policy to state two licensed providers should be present on the insertion of an indwelling catheter.
- Add verbiage to state containment bag should never touch the floor at any time (not only during patient transportation).

(CDC, 2016; HF, 2013; HF, 2016b; HF, 2016c; HF, 2017c; IHI, n.d.b.; IHI, 2011; Schuur, Chambers, & Hou, 2014)

Design Implementations

Policy Updates: CP 15.02

- Two licensed personnel should place a Foley catheter.
- In the post-anesthesia care unit (PACU), catheters should be removed immediately without indication for continued use, *before* transfer to a nursing unit.
- Add verbiage regarding nurse hand-off and communication to include documentation of bladder scans, post-void residual (PVR), and number of straight catheterizations. This should be performed electronically and verbally to the nurse taking over patient care.

(Abdel-Aleem, Aboelnasr, Jayousi, & Habib, 2014; AHRQ, 2015, p. 5; CDC, 2016; De Sevo & Semeraro, 2010; Fattah & Santoso, 2013; HF, 2014a; HF, 2015b; HF, 2016c; IHI, 2011; Li, Wen, Wang, & Li, 2011; Moulton, Lachiewicz, Xiaobo, Goje, & Liu, 2018; Pandey, Mehta, Grover, & Goel, 2015; Wilson, Passante, Rauschenbach, Yang, & Wong, 2015)

Design Implementations

Policy Updates: Indwelling Foleys

CP 2.33: Specify indications; remove epidural anesthesia

- Specify indication for use for strict urinary output for “critically ill patients” only, per the AHRQ. Remove epidural anesthesia as an indication, including for laboring women.

CP 15.26 update: Outline bladder scan policies

- Post-operative care should include nurse-driven protocols to perform bladder scans and up to three intermittent (straight) catheterizations prior to placing an indwelling Foley.

CP 16.30 update: Caesarean section surgical procedures

- Removed automatic placement of indwelling catheters for Caesarean section pre-operative procedures.

(Abdel-Aleem, Aboelnasr, Jayousi, & Habib, 2014; AHRQ, 2015, p. 5; CDC, 2016; De Sevo & Semeraro, 2010; Fattah & Santoso, 2013; HF, 2014a; HF, 2015b; HF, 2016c; IHI, 2011; Li, Wen, Wang, & Li, 2011; Moulton, Lachiewicz, Xiaobo, Goje, & Liu, 2018; Pandey, Mehta, Grover, & Goel, 2015; Wilson, Passante, Rauschenbach, Yang, & Wong, 2015)

Design Implementations

Documentation & Audits

- Modify the computerized charting system, Sunrise Clinical Management (SCM) on the next round of software updates:
  - Pop-up reminders for nurses and physicians regarding length of time a patient's indwelling catheter has been in place.
  - Place input box or checkbox for daily physician documentation of ongoing need.
  - Place input box for nurses to document patient/family education on appropriate indications and care for indwelling catheters.
  - Teaching should include:
    - Do not touch or play with the tubing.
    - How to perform meatal cleansing if able to perform self-care and the patient desires independence in bathing.
    - Do not disconnect tubing or attempt to reconnect an open system.
    - The patient's indications for the catheter.

(Bernard, Hunter, & Moore, 2012; CDC, 2016; HF, 2013; Health Protection Scotland, n.d.; Spath & Kelly, 2017)

Design Implementations

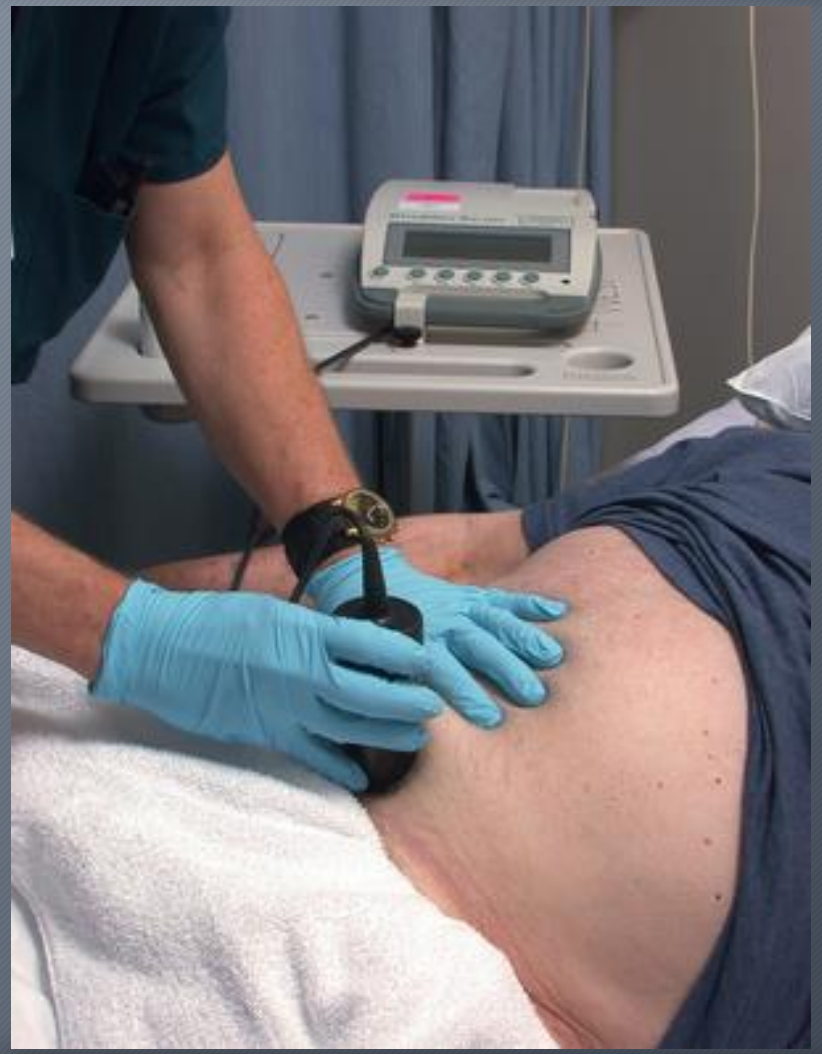
Documentation & Audits

- Implement CAUTI bundle checklist audits monthly (beginning June-July 2018) to ensure 100% compliance. Incorporate into management audits.
- Unit audits for nurses can be assigned to a CAUTI champion which counts towards BSN-RN requirement. This should be performed weekly on random days.
- Update CAUTI bundle checklist to determine (via charting and patient questioning) if staff educated the patient and taught patients/families how to reduce CAUTI complications.

(Bernard, Hunter, & Moore, 2012; CDC, 2016; HF, 2013; Health Protection Scotland, n.d.; Spath & Kelly, 2017)

Design Implementations

Ongoing Education



- Revise annual CAUTI/indwelling urinary catheter video required by all HF associates to include new updates.
- Institute clearly-outlined bladder scan policy following template from AHRQ. Scan a patient who has not voided in eight hours or who has suspected retention. This is nurse-driven and does not require a physician's order. Straight catheterizations require order the first time (for up to three). Set a PVR of 300ml as indication for notifying the provider.
- Ensure all nursing units have a working bladder scanner, back-up batteries, and designated battery charger in a locked location. Reinforce with nurse champion in each setting.
- On transfer from PACU to nursing unit, number of bladder scans, PVR, and number of straight catheterizations should be documented electronically and relayed verbally to the nurse taking over patient care.

(Addison, 2000; AHRQ, 2017; AHRQ, 2018; CDC, 2016; HF, 2017c; IHI, 2011; CDC, 2016)

Design Implementations

Ongoing Education

- Teach staff how to implement and document changes via annual education and inservice updates; update nurse-driven protocols and clinical informatics to reflect new policies.
- Include teaching that catheter balloon should not be tested by filling with saline prior to insertion.
- Roll out teaching to transportation personnel from July through August 2018 to re-educate on Foley bag placement during transport (below bladder level, not on lap).
- Institute annual competency assessments or “Competency Days” during annual education for bedside care staff. Emphasize nurse-driven protocol for Foley removal. Assess nurses for comfort and compliance with new protocols.
- Medical directors will encourage and enforce physician support of nursing actions.

(CDC, 2016; HF, 2014c; HF, 2015a; IHI, 2011; North Dakota Department of Health, 2011)

Design Implementations

CAUTI Prevention Teams

CAUTI champions: nurse and physician leaders who will be dedicated to prevention activities, educational updates, ensuring audits, and promoting adherence in respective professions.

- Focus on fiscal and antimicrobial stewardship.
- Include specialty areas affected by CAUTI and HAIs.
- Champion team will be responsible to notify hospital policymakers of changes in evidence-based guidelines and advocate for research projects to fill gaps in evidence.

(CatheterOut.org, n.d.; CDC, 2016; CDC, 2017; Medicare.gov, 2017; NHSN, 2017; Spath & Kelly, 2017)

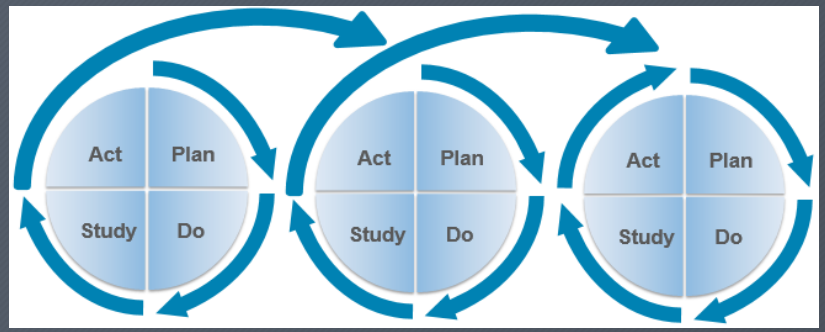
Design Implementations

CAUTI Prevention Teams

- Posters, inservice updates, and reminders will be periodically published in break areas.
- Nurse champion will oversee CAUTI audit nurses on each unit and will task them with publishing posters and speaking to colleagues.
- CAUTI rates will be collected for a 12-month period and reported via NHSN tools to CMS and the CDC.

Unit Managers:

Demonstrate support by regularly rounding with staff to listen to challenges and successes.



(CatheterOut.org, n.d.; CDC, 2016; CDC, 2017; Medicare.gov, 2017; NHSN, 2017; Spath & Kelly, 2017)

Cost & Potential Savings

Negligible:

Paper and office supplies

Bath basins: 3.5 basins at $0.89 each

Liners: cost unavailable

CHG wipes: $4.10 per package

Straight cath tray: $2.52 (up to 3 to replace Foley)

(AllegroMedical, n.d.; Cascade, n.d.; Glassdoor, 2018; Groves, 2012; Kennedy et al., 2013; Medicoshc, n.d.; Phelan, Daniels, & Hewitt, 1999; Ribeiro, Vieira, & Cunha, 2014; Salary.com, 2018; Shah, Schwartz, Luna, & Cullen, 2016)

Cost & Potential Savings

Bladder scanners: $6,000

SCM software upgrade: $100,000

Staffing/training: $316,680 annually

(AllegroMedical, n.d.; Cascade, n.d.; Glassdoor, 2018; Groves, 2012; Kennedy et al., 2013; Medicoshc, n.d.; Phelan, Daniels, & Hewitt, 1999; Ribeiro, Vieira, & Cunha, 2014; Salary.com, 2018; Shah, Schwartz, Luna, & Cullen, 2016)

Cost & Potential Savings

CHG wipes: cost savings of 10x the CHG cost.

Education: reduced overall infection rates.

Nursing time inefficiently spent looking for bladder scanner.

Reduced LOS: 2-4 days per incident

Reduced Foley trays: $9.30 each

Clinical education offset by students who fill in practice: $26.50 per day, $9,600 yearly

$3,800 per CAUTI prevented &

$64,600 saved annually.

(AllegroMedical, n.d.; Cascade, n.d.; Glassdoor, 2018; Groves, 2012; Kennedy et al., 2013; Medicoshc, n.d.; Phelan, Daniels, & Hewitt, 1999; Ribeiro, Vieira, & Cunha, 2014; Salary.com, 2018; Shah, Schwartz, Luna, & Cullen, 2016)

Questions?