TROUBLE IN THE TUNNEL:

A New Perspective on Catheter-Associated Urinary Tract Infections

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Outline:

- Review the background of catheter-associated urinary tract infections (CAUTI)
- Share project and results from Trillium
- Review catheter best practice at any site.
Background:

- 25% of acute care & 4-5% of LTC patients are catheterized
- 30-50% urinary catheters not medically indicated
- Urinary tract infections (UTIs) - most common hospital acquired infection
  - 80% hospital acquired UTIs are catheter-associated urinary tract infections (CAUTI)
- Each day catheterized ↑ CAUTI risk by 3-10%
- 30-40% of MDs unaware patient has a catheter
- CAUTI is now considered a “never event” & Medicare “do-not-pay”
Elderly patients that do not have dementia have a mortality odds ratio of ~5 when CAUTI occurs (5X).

CAUTI increases LOS and costs:
- Avg $500-$1000 USD per CAUTI event
- Avg $2800 USD per CAUTI event with bacteremia
Platform for Change at Trillium

♦ Front line staff identified harm to patients
  • IUCs inserted frequently
  • Stayed in too long
  • Restricted patient mobility
  • Delayed discharge
  • Caused catheter associated urinary tract infections (CAUTI)
10 COMMANDMENTS OF
DAILY PRACTICE IN THE E.R.

1. Introduce self and room
   plan.
2. Undress & belongings
   secured with patient or
   family.
3. ID bracelet/band on
   patient.
4. Bedside relax if appropriate.
5. Call bell within reach.
6. Ensure comfort measure
   pro-
   moted.
7. Document assessment
   appropriately (documentation
   ger older ages at least 60th
   with acute patient).
8. Foley is emptied and/TV/NG
   replaced checked.
9. Equipment check (carts and
   bedside checked).
10. Repeat = return to
    commandment 1.
Best tested strategy is to first **promote early catheter removal**... and then change the culture of inappropriate urinary catheter insertions.

<table>
<thead>
<tr>
<th>Commandments of Practice in the E.R.</th>
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<tr>
<td>6. Ensure comfort measure prn</td>
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<td>7. Document assessment appropriately (documentation q4h/vital signs at least q2h with acute patients)</td>
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<tr>
<td>8. Foley is emptied and IV bag replaced checked</td>
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<td>9. Equipment check (carts and bedside check)</td>
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<td>10. Repeat – Return to commandment 1</td>
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Research From Others

- **Daily reminders** from nurses to physicians ↓ dwell time by 2 days in ICU

- Computer-based **order entry** to insert catheter combined with **computer reminder** to remove catheter ↓ dwell time by 3 days

- **Stop order** requiring removal of catheters not meeting justified indications to continue ↓ dwell time

Huang (2004); Cornia (2003); Loeb et al. (2008)
Ordered by MD on admission order set or as single order

e.g. “indwelling urinary catheter by clinical protocol”
Exclusion criteria

- Retention not amenable to management using intermittent catheterization
- Known challenges to insertion of a urinary catheter and/or previously requiring catheterization by a Urologist
- Long term use of an indwelling catheter (more than 30 days)
Implementation Considerations

- Indwelling urinary catheters cause hospital acquired UTIs associated with morbidity and even mortality

- Patient or substitute decision maker has received education about need for indwelling urinary catheter
### Approved indications for IUCs

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<td>Close/hourly monitoring of urinary output (e.g., critically ill patients)</td>
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<td>Managing obstruction of the urinary tract distal to the bladder (e.g., prostate enlargement, significant uterine prolapse)</td>
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<td>Protect open wound at sacral/perineal area from urinary incontinence</td>
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<td>Providing comfort care in the terminally ill</td>
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<td>Providing continuous bladder irrigation (CBI)</td>
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<td>Preparing for planned urologic/prostatic surgery</td>
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<td>Pre-operative patients going directly to the operating room</td>
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Protocol Orders

- Nursing to assess need for continued use of catheter \textbf{daily} against approved indications.

- If no approved indications are met, catheter discontinued & nurse to inform Physician.

- If $\geq$ indications met, catheter remains and nurses document on ER. A ‘drop-down’ menu must be completed which provides rationale.
If patient unable to void 6 hours after catheter is discontinued then “Intermittent Bladder Catheterization Clinical Protocol” initiated.

If symptoms of new UTI while catheter is in place (e.g., T greater than/equal to 38°C, suprapubic pain, flank pain, delirium) urine R+M and urine C+S sent and MD informed.
Data Collection

- **Baseline**: 2-week period, prospective, 3 medical wards with high expected CAUTI prevalence

- **Data elements**
  - Gleaned from daily interview with bedside nurse:
  - MRN, catheter present (Y/N), indication for catheter

- **4 weeks, 6 months, 1 year post-implementation**: 2-week period, prospective, same data elements

- Daily data collection from nursing = opportunity for education

Total 5,100 observations made
Encouraging Pilot Data

Baseline Prevalence of Urinary Catheter:
- Any Approved Indication: ~5 CAUTIs
- Unnecessary: ~$182,000 / year

Post-Pilot Prevalence of Urinary Catheter:
- Any Approved Indication: 0 CAUTIs
- Unnecessary: ~$182,000 / year

Total savings: ~$182,000 / year
Encouraging Pilot Data:

Prevalence of Urinary Catheter

Baseline

- Any Approved Indication: 27%
- Unnecessary: 78.2%
- Total: 105.2%

Post-Pilot

- Any Approved Indication: 16.9%
- Unnecessary: 32.4%
- Total: 49.3%

1 unit down to 6%
CATHETER PREVALENCE: Sustainability

Overall urinary catheter use reduced by 46.5%, sustained at 1 year!
UNECESSARY CATHETERS: Sustainability

Unnecessary catheter prevalence reduced by 67% at 1 year!
Awards won

- 2009 - Trillium’s “Quality Awards of Excellence: New Improvement
- 2010 - Trillium’s “President’s Award of Excellence: Sustainability”
- 2011 OHA - Health Achieve
  - 1st prize for Leading Practices in category of Patient Safety
  - 1st prize for Overall Winner of Leading Practices
- 2012 – Canadian College of Health Leaders: Canadian Health Care Safety Award
Reducing IUC Insertion in the ED

- Recent IUC audit by nursing students
  - 30% without order for insertion
  - Older women more likely to be catheterized
  - Common rationales: monitor output, sepsis / decreased LOC, IV Lasix, obtaining urine sample

- Themes consistent with emerging literature

- In Progress: medical directive with clear reasons for catheter insertion
Clinical protocols are very useful and promote:
- Sustained gains and ongoing improvement
- Hardwiring change at the bedside
- Organizational memory

Project ‘alignment’ is key to sustainability:
- Nursing empowerment, physician work flow, early patient mobilization, less infections
- The ‘right’ thing to do

Minimal sustainability efforts is evidence of hardwired culture change
Lessons Learned

- Reduction in **unnecessary catheters** = surrogate marker for reduction in catheter-associated UTIs

- Reduction in overall catheter utilization translates into **real cost savings**
  - Less supplies, earlier mobilization = decreased length of stay and complications (e.g., pressure ulcers)

- **Quality improvement is fun**
  - Provides opportunities for enhanced job satisfaction
Urinary Catheter Best Practice: appropriate catheter use

• Catheterize only when necessary and for only as long as necessary
  – Minimize use in those at risk for CAUTI-women, elderly, impaired immunity, nursing home residents
• Insert catheters using aseptic techniques & sterile equipment
• Maintain closed, sterile drainage system
Appropriate catheter use:

- Consider using alternative to indwelling urethral catheterization in selected patients when appropriate
  - Consider using external (condom) catheters as alternative to indwelling catheters in cooperative men without urinary retention or bladder outlet obstruction
  - Intermittent catheterization is preferable to indwelling catheters or suprapubic catheters in patients with emptying dysfunction
Urinary catheter best practice: other strong recommendations

♦ Educate staff on proper catheter insertion/care

♦ Secure catheter properly to thigh/abdomen
  • Prevent movement & urethral traction

♦ Maintain free flow to urine (no obstruction)

♦ Obtain urine samples aseptically
Urinary catheter best practice: other MODERATE recommendations

- Use smallest size (bore) catheter
- Avoid irrigation unless needed to prevent/relieve obstruction
- Do not change catheters at arbitrary fixed intervals e.g. Q 6 weeks
  - Change based on clinical indications e.g. infection, obstruction
- Routine hygiene (cleansing of meatal surface during daily bathing or showering) not antiseptics
Questions?

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References


