Background

- Catheter-associated urinary tract infections (CAUTIs) are the most common type of healthcare-associated infection.
- A recent study found that nursing home residents with suprapubic catheters (SCs) had fewer CAUTIs, hospitalizations, and antibiotic use compared to those with indwelling urethral catheters (IUCs).  
  - No assessment of antibiotic use with regard to  
  - days of therapy, agents used, or effects on antimicrobial stewardship
- It is not well described whether SCs offer benefit over IUCs in incidence of asymptomatic bacteriuria and catheter-associated infection, or in subsequent antibiotic choice and overall exposure.

Objective

The objective of this study was to determine the incidence of asymptomatic bacteriuria and CAUTIs among patients with an SC who had a prior IUC and to compare antimicrobial usage between SCs and IUCs periods.

Methods

- **Design:** Retrospective cohort study of unique patients with SCs placed at VA Pittsburgh Healthcare System from February 2015 to March 2018.
- **CAUTI Definition:** The presence of symptoms of UTI with no other identified source with ≥10^5 CFU/mL of ≥1 pathogen.
- **Criteria:** Inclusion - Suprapubic catheter in place ≥30 days  
  - Prior indwelling urethral catheter in place ≥30 days
- **Exclusion Criteria:**  
  - Urologic malignancy  
  - Resident of non-VA long-term care facility  
  - Received urologic care outside of the VA system

Results

Baseline Demographics

<table>
<thead>
<tr>
<th>Variable</th>
<th>All patients (n=18)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographics</td>
<td></td>
</tr>
<tr>
<td>Median age in years at time of SC placement (range)</td>
<td>74.5 (57-91)</td>
</tr>
<tr>
<td>Male, no. (%)</td>
<td>14 (100)</td>
</tr>
<tr>
<td>Median days SC was in place (range)</td>
<td>213 (49-1085)</td>
</tr>
</tbody>
</table>

Indications

- Diabetes
- Neurogenic Bladder
- Urinary Retention

Underlying Conditions

- Multiple Sclerosis
- Benign Prostatic Hyperplasia
- Parkinson’s Disease
- Other

Asymptomatic Bacteriuria

% Patient who received an antibiotic for asymptomatic bacteriuria:

- 44% (8/18) and 39% (7/18) received at least one antibiotic course during IUC and SC periods.
- 170 days of antibiotic therapy were given for asymptomatic bacteriuria per 4,881 IUC days vs 107 days for asymptomatic bacteriuria per 4,881 SC days (p=0.0001).

Microbiology of CAUTIs

<table>
<thead>
<tr>
<th>Pathogen</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pseudomonas aeruginosa</td>
<td>29%</td>
</tr>
<tr>
<td>Candida albicans</td>
<td>12%</td>
</tr>
<tr>
<td>Klebsiella pneumoniae</td>
<td>12%</td>
</tr>
<tr>
<td>Enterococcus faecalis</td>
<td>18%</td>
</tr>
<tr>
<td>Other</td>
<td>29%</td>
</tr>
</tbody>
</table>

Asymptomatic Bacteriuria

51% Patient who received an antibiotic for asymptomatic bacteriuria.

Catheter-Associated Urinary Tract Infections

% Patient who received an antibiotic for CAUTI:

- Median rate of CAUTI was 0.25 per 100 IUC days versus 0.08 per 100 SC days (p=0.15).
- 39% (7/18) and 22% (4/18) received at least one antibiotic course during IUC and SC periods.
- 163 days of antibiotic therapy were given for CAUTI per 4,881 IUC days versus 38 days of antibiotic therapy for CAUTI per 4,881 SC days (p=0.0001).

Conclusions

- SCs were associated with significantly less overall antibiotic exposure than IUCs, both as treatment of CAUTIs and as inappropriate agents against asymptomatic bacteriuria. CAUTI rates were similar among patients with SCs and IUCs, although cultures were performed more often in those with IUCs.
- Our sample size may be too small to detect a difference in CAUTI rates.
- However, taken together with results from another recent study comparing SC and IUC in long-term care residents, SCs may be an option to reduce urinary cultures, CAUTIs, and antimicrobial exposure in patients requiring long-term urinary catheterization.

- Reducing the treatment of asymptomatic bacteriuria remains a leading stewardship challenge.

Limitations

- Limited generalizability due to single Veterans Affairs long-term care facility resulting in small sample size

Acknowledgments

We thank Jamie McBray, PharmD and Jeff Wagner, PharmD for their assistance with data acquisition and Ryan Tuma, PharmD for his assistance with data analysis and statistical analysis. The data presented were part of increased activities for quality improvement. An audit performed on 3/27/17 has been completed. This information has been approved for presentation.

References