Multidisciplinary Urological Management Program for Geriatric Orthopaedic Trauma Patients with Urinary Retention – reduce urinary catheter time and catheter related urinary tract infection

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Geriatric Orthopaedic Trauma Patients with Urinary Retention
Impact of a urinary catheter on mobility

I hope I can walk freely without a urine catheter and bag.
Worries for patient, family members and healthcare professionals
Catheter-associated UTI (CAUTI)

- UTI is the most common nosocomial infection
- UTI: ~ 40% of all hospital-acquired infections
- 80% related to use of indwelling urinary catheters
- Indwelling urinary catheters
  - ~ 60x more bacteraemia over a 1-year period than patients without catheters
  - 10-40% CAUTI if catheter in situ < 7 days
  - ~100% CAUTI if catheter in situ > 30 days

Top Five Healthcare Acquired Infections by Hospital Group (HA Prevalence Survey of Infections 2010)

<table>
<thead>
<tr>
<th>Hospital Group</th>
<th>Infection Type</th>
<th>n (% )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1 (N*(^=)447)</td>
<td>Pneumonia</td>
<td>125 (28.096)</td>
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<tr>
<td></td>
<td>Surgical site infection</td>
<td>86 (19.296)</td>
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<tr>
<td></td>
<td><strong>Urinary tract infection</strong></td>
<td>64 (14.396)</td>
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<tr>
<td></td>
<td>Bloodstream infection</td>
<td>57 (12.896)</td>
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<tr>
<td></td>
<td>Skin &amp; soft tissue infection</td>
<td>42 (9.496)</td>
</tr>
<tr>
<td>Group 2 (N*(^=)73)</td>
<td>Pneumonia</td>
<td>26 (36.896)</td>
</tr>
<tr>
<td></td>
<td><strong>Urinary tract infection</strong></td>
<td>22 (30.196)</td>
</tr>
<tr>
<td></td>
<td>Skin &amp; soft tissue infection</td>
<td>11 (15.196)</td>
</tr>
<tr>
<td></td>
<td>Bloodstream infection</td>
<td>5 (6.896)</td>
</tr>
<tr>
<td></td>
<td>Lower respiratory tract infection, other than pneumonia</td>
<td>4 (5.696)</td>
</tr>
<tr>
<td>Group 3 (N*(^=)15)</td>
<td><strong>Urinary tract infection</strong></td>
<td>5 (33.396)</td>
</tr>
<tr>
<td></td>
<td>Eye, ear, nose, throat, or mouth infection</td>
<td>3 (20.096)</td>
</tr>
<tr>
<td></td>
<td>Pneumonia</td>
<td>3 (20.096)</td>
</tr>
<tr>
<td></td>
<td>Bloodstream infection</td>
<td>2 (13.396)</td>
</tr>
<tr>
<td></td>
<td>Skin &amp; soft tissue infection</td>
<td>2 (13.396)</td>
</tr>
<tr>
<td>Group 4 (N*(^=)5)</td>
<td>Skin &amp; soft tissue infection</td>
<td>3 (60.096)</td>
</tr>
<tr>
<td></td>
<td>Eye, ear, nose, throat, or mouth infection</td>
<td>1 (20.096)</td>
</tr>
<tr>
<td></td>
<td><strong>Urinary tract infection</strong></td>
<td>1 (20.096)</td>
</tr>
<tr>
<td>Group 5 (N*(^=)15)</td>
<td><strong>Urinary tract infection</strong></td>
<td>5 (33.396)</td>
</tr>
<tr>
<td></td>
<td>Bloodstream infection</td>
<td>2 (13.396)</td>
</tr>
<tr>
<td></td>
<td>Gastrointestinal system infection</td>
<td>1 (6.796)</td>
</tr>
<tr>
<td></td>
<td>Skin &amp; soft tissue infection</td>
<td>1 (6.796)</td>
</tr>
<tr>
<td></td>
<td>Surgical site infection</td>
<td>1 (6.796)</td>
</tr>
</tbody>
</table>

Group 1 hospital: general acute hospitals with 24 hours A&E service
Group 2 hospital: mixed acute & non-acute hospitals
Group 3 hospital: non-acute or infirmary hospitals
Group 4 hospital: psychiatric hospitals
Group 5 hospital: hospitals of special nature
Old practice
Management of urinary retention

- In-patient consultation to urologist for urinary retention
- TWOC 1-2 times with or without alpha blocker
- Book Urology SOPC FU ~ 59 weeks waiting time
- Resulting in delay
- Unnecessary prolonged urethral catheterization and associated complications
Let’s have a look at the Problems:

1. High complex team
2. No unified protocol
3. Resources not fully utilized
4. Multiple consultation
5. Unnecessary doctor travel
6. Concerned patients and family
Collaboration between different departments
Eligible Criteria

- Age \( \geq 65 \) (both male and female)
- Traumatic case (e.g. #hip, #LL, #pelvis with conservative Mx)
- AROU: post-void residual urine volume \( \geq 300 \text{ml} \)

Exclusion criteria:
- Active UTI
- Obstructive uropathy
- Urolithiasis

Pre-requisition:
- Pain control
- Constipation resolved
- Adequate hydration
TWOC program (try wean off Foley catheter every 2 weeks when Foley catheter is due change)

- Has Foley on discharge
  - 8 weeks – CNS or Surgical Day Ward
  - 12 weeks - Urology Nurse clinic
  - 16 weeks - Urology specialist clinic

- No Foley on discharge
  - No need to refer CNS
  - 12 weeks - Urology Nurse clinic
  - 16 weeks - Urology specialist clinic

Weeks counted from date of orthopaedic intervention for fractures
We serve patients from QEH to KH, and from hospital to community
- Review period: date of admission to O&T wards: 28-7-2011 to 19-10-2012.
- One hundred and three patients (n=103) had data available for analysis.
- The mean age was 85.81 (SD 7.2, range 66-100) years.
- There were 43 male patients (41.7%) and 60 female patients (58.3%).
Successful Trial Without Catheter (TWOC)

Total 88 (83.8%) patients had eventually successful TWOC

<table>
<thead>
<tr>
<th></th>
<th>No. of success</th>
<th>Percentage</th>
<th>Cumulative percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>TWOC 30days</td>
<td>10</td>
<td>10.0%</td>
<td>10.0%</td>
</tr>
<tr>
<td>TWOC 90days</td>
<td>57</td>
<td>57.0%</td>
<td>67.0%</td>
</tr>
<tr>
<td>TWOC 365days</td>
<td>16</td>
<td>16.0%</td>
<td>83.8%</td>
</tr>
</tbody>
</table>

![Graph showing the proportion of patients who achieved successful TWOC over time.](image)
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<tr>
<th></th>
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<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>TWOC in ward</td>
<td>18</td>
<td>20.4%</td>
</tr>
<tr>
<td>TWOC by CNS</td>
<td>33</td>
<td>37.5%</td>
</tr>
<tr>
<td>TWOC in nurse clinic</td>
<td>36</td>
<td>40.9%</td>
</tr>
<tr>
<td>TWOC after surgery</td>
<td>1</td>
<td>1.1%</td>
</tr>
</tbody>
</table>
For patients joined TWOC program for 90 days, unsuccessful TWOC patients are in 37.196 times more having UTI in outcome than successful TWOC patients and it is statistically significant with p-value < 0.001.
Relationship between successful TWOC and age

- Independent-sample t-test was adopted.
- Age is not a predictor for the outcome of successful TWOC. ($p = 0.443$)
- Advanced age does not exclude the successful of TWOC.
Relationship between successful TWOC and total length of hospitalization (acute length + rehab length)

- Total length of stay (i.e. acute + rehab. LOS) was positively correlated with the time to achieve successful TWOC.
- It is statistically significant with p value = 0.011 with correlation coefficient 0.049.
Relationship between unsuccessful TWOC and other predictors

The relationship between time to achieve successful TWOC and:

- CVA $p = 0.056$
- Dementia $p = 0.387$
- BPH $p = 0.852$
- DM $p = 0.628$
- Parkinsonism $p = 0.761$
- Psychiatric illness $p = 0.525$
Encouraging outcomes

1. Shortened urinary catheter time from > 52 weeks to 90 days on average.

2. Reduced catheter-associated UTI and the manpower wastage in catheter management.

3. Dependent factor for length of hospitalization.

4. Speed up urology specialist clinic 1st appointment time from 59 weeks to 16 weeks.
Thank you