**Clinical Nurse Leader Impact on Inappropriate Indwelling Urinary Catheter Days**

Pam Johnson, RN-BC, BSN
Xavier University 3800 Victory Parkway Cincinnati, Ohio 45207 and Bethesda North Hospital 10500 Montgomery Road Cincinnati, Ohio 45242

**Healthcare Issue**
- Catheter Associated Urinary Tract Infections (CAUTIs) are considered a CMS Never Event and as of 2008, no longer reimbursable.
- Mandatory quarterly nursing education module regarding Prevention of CAUTI completed by staff of the medical-surgical unit in November 2008, included macrosystem's criteria for appropriateness of indwelling urinary catheter (CAUC).

**Systems Theory**
- Irving (1993) defines systems as a network of interdependent compartments that work together to accomplish a specific aim.
- The macrosystem's outcomes are no better than the outcomes of each system because they are interdependent. The microsystem is the front line that produces quality, safety, and cost outcomes (Nelson, 2007).
- Midwestern suburban hospital (macrosystem) and the medical-surgical unit (microsystem) share phase of CAUTI prevention because it is a never event and not reimbursable from CMS (2008).

**Change Theory**
- Unfreeze
  - Staff were task-focused and unaware of patients with inappropriate indwelling urinary catheters. Unfreezing occurred when the CNL student asked "Why does the patient have a catheter?" forcing the staff to take a step back and assess for appropriateness.
- Change
  - CNL student reinforced use of CAUC for daily assessment, obtained orders to remove inappropriate indwelling urinary catheters, and gave positive reinforcement to staff that were proactive.
- Refreeze
  - Staff accepted the change of applying CAUC daily. Without being reminded, staff verbalized the next step of obtaining an order to remove the catheter and followed through without assistance of CNL student.

**Evaluation**
- **Inappropriate Indwelling Urinary Catheter Days**
  - July: 66 days or 31.6% of total catheter days
  - October: 10 days or 6.8% of total catheter days
- **Indwelling Urinary Catheter Utilization Ratio**
  - July: 0.27
  - August: 0.28
  - September: 0.21
  - October: 0.24
- **Average Duration Indwelling Urinary Catheter Days**
  - July: 4.1 days
  - October: 2.9 days

<table>
<thead>
<tr>
<th>Month</th>
<th>Pre-CNL Data (M=4.09 SD=3.38 N=51)</th>
<th>Post-CNL Data (M=2.88 SD=1.90 N=51)</th>
<th>t(79)= 2.23, p&lt;=0.05</th>
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</thead>
<tbody>
<tr>
<td>July</td>
<td>7.28</td>
<td>5.5</td>
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<tr>
<td>August</td>
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<tr>
<td>September</td>
<td>7.5</td>
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<tr>
<td>October</td>
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**Potential Outcomes**
- Decrease inappropriate indwelling urinary catheter days.
- Decrease in indwelling urinary catheter utilization ratio.
- Decrease average duration of indwelling urinary catheter days.
- Decrease in incidence of CAUTI cases.
- Automatic reminder built into electronic documentation system.
- Approval of CNL on pilot unit and eventual roll out to all units.

**Clinical Nurse Leader at Work**
- CNL student developed question "In patients identified with indwelling urinary catheters on a medical surgical unit, could the CNL student impact inappropriate indwelling urinary catheter days and the catheter utilization ratio by using evidence based practice of reminding staff to utilize CAUC daily and obtaining physician orders to remove inappropriate catheters?"
- Early September 2010, Pre CNL data Baseline data obtained via retrospective chart review of the first 50 patients discharged from the medical-surgical unit beginning July 1, 2010 that had an indwelling urinary catheter Inappropriate and total indwelling urinary catheter days were calculated and categorized according to CAUC. CAUC reviewed with staff via one on one education, during multidisciplinary rounds, and microsystem electronic mail.
- Mid September 2010 through Mid November 2010 CNL student intervention identified current patients with indwelling urinary catheters, assessed for appropriateness utilizing CAUC, collaborated with nursing/physicians to obtain orders to remove inappropriate urinary catheters, and monitored staff to assess CAUC daily.
- Mid November 2010 Post CNL data collected via retrospective chart review of the first 50 patients discharged from the medical-surgical unit beginning October 1, 2010 that had an indwelling urinary catheter Inappropriate and total indwelling urinary catheter days were calculated, categorized according to CAUC, and compared to pre CNL data.

**Nursing Theory at Work**
- According to Virginia Henderson (1966), the nature of nursing is the unique function of the nurse to assist the person, sick or well, to perform activities to enhance health, recovery, or peaceful death that he would do unaided if he had the necessary strength, will or knowledge.
- The ultimate goal is to help the patient gain independence as rapidly as possible.
- The nurse must put herself in the skin of the person in order to know what he needs.
- The CNL student promoted patient independence by obtaining an order to remove the indwelling urinary catheter. Without a urinary catheter, the patient is encouraged to increase activity by getting out of bed to void.
- By increasing activity, strength is retained or gained which leads to a faster path toward independence.
- When the CNL student got in the skin of the patient, the CNL student was the first one to ask for an order to remove a urinary catheter, strictly based on comfort alone.

**Lateral Integration**
- CNL student integrated care across the microsystem by approaching nursing and physicians to obtain orders to remove inappropriate indwelling urinary catheters.
- CNL student requested information systems to build in computerized reminders to physicians when an indwelling urinary catheter has been in greater than 4 days and reminders to nurses to complete daily assessments for appropriateness of indwelling urinary catheters.
- Macrosystem in process of purchasing new electronic medical record package, therefore, changes to current system will be limited.

**Stewardship**
- The macrosystem had 6 CAUTIs FY09, 17 in FY10, and 4 for 1st quarter FY11 with potential loss of $81,000 due to non-reimbursement.
- Pre-CNL average Length of Stay (LOS) was 5.62 days for patients with indwelling catheters and Post-CNL average LOS was 4.52 days for a decrease of 0.9 days.
- If the 50 patients with indwelling urinary catheters over 35-45 days were sent home 0.9 days early, 45 additional days would be available for new admissions with a bed charge of $1121 per day approximately 9 times a year for a potential increase in revenue of $454,000 (6 days x $1121 per day x 9 times a year).

**Literature Review**
- Thirty six percent of all hospital acquired infections are due to indwelling urinary catheters. (Green, Marx, and Oriola, 2008) which translates into 380,000 infections and 9000 deaths related to CAUTI per year that could be prevented. (Gould et al., 2009)
- CAUTI is estimated to cost $300-3000 per hospitalization and add 0.4-2.5 days to length of stay (Greene et al., 2008).
- Gokula, Holiner, and Smith (2004) found 54% indwelling urinary catheters did not meet the utilization criteria determined by their hospital.
- Huang et al. (2004) used nursing to prompt physician order writing to remove inappropriate urinary catheters which decreased average catheter days from 7.6 to 4.6 days and CAUTI incidence dropped from 11.5 to 8.3 per 1000 catheter days.
- Reilly et al. (2006) reduced prevalence of indwelling urinary catheters from 93% to 87% with use of an appropriateness checklist, resulting in decrease of incidence of CAUTI by 33%.
- Crossen et al. (2007) initiated daily reminder after day four of insertion which decreased average indwelling urinary catheter days from 8.4 to 6.7 and decreased the incidence of CAUTI from 10.6 to 1.1 per 1000 catheter days.
- Brunettien et al. (2010) applied a sticker to the patient chart to remind physicians that the patient had an indwelling urinary catheter. CAUTI rate decreased from 7.02 to 2.72 and inappropriate catheters decreased from 43% to 14%.

**Computerized reminders to physicians when an indwelling urinary catheter was identified by CNL student, and not the staff, staff verbalized the next step of obtaining an order to remove the catheter and followed through without assistance of CNL student.