A Successful Bundled Approach to Decrease Catheter–Associated Urinary Tract Infections in a Community Hospital

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1. Introduction
Hospital acquired catheter-associated urinary tract infection (CAUTI) is a frequent occurrence in the healthcare setting. There is a known association between catheter usage and incidence of CAUTI. Studies have shown that patients with CAUTI have increased costs of care and increased length of stay compared with the ones without CAUTI. In addition it was noted there is increase mortality associated with CAUTI.

2. Objectives
To evaluate whether a bundled and step-wise approach associated with consistent education was able to achieve a decrease in urinary catheter usage and CAUTI rates. To observe whether the results are sustainable.

3. Methods
We implemented a bundled and step-wise approach to attempt decrease of urinary catheter usage in our institution, a large community hospital with a robust infection prevention department. We hypothesized that implementing measures to decrease catheter usage will decrease the incidence of CAUTI. Starting first quarter of 2014 we implemented order sets that prioritized non-invasive urinary management methods such as condom catheters over the use of indwelling urinary catheters; these also included orders to aid in bladder retraining after catheter removal, with very clear and limited indications for catheter re-insertion. (Fig.1-5) The order sets were followed by a best practice alert (BPA) for physicians in the electronic medical record (EMR) signaling the presence of a urinary catheter for longer than 24h, implementation of daily safety call, introduction of adult incontinence brief scales and PureWick™ external female urinary management device. There was consistent nursing and physician education accompanying any and all changes. The last intervention was in the first quarter of 2017. The urinary catheter utilization rate was calculated as urinary catheter days divided by patient days. We also calculated CAUTI rates per one thousand catheter days.

4. Results
Data were obtained from all hospital units between 2013 and 2017. We considered the 2013 data to be baseline as it was consistent over the preceding 2 years. The average urinary catheter utilization rate decreased consistently from 23.7% in 2013 to 22.5% in 2014, 19.4% in 2015, 16.6% in 2016 and 14.5% in 2017. The absolute number of CAUTI decreased from 52 in 2013 and 2014 to 30 in 2015, 27 in 2016 and 15 in 2017 (Fig. 6,7). The average CAUTI rate per one thousand catheter days decreased from 1.99 in 2013 to 1.92 in 2014, 1.38 in 2015, 1.37 in 2016 and 0.8 in 2017 (Fig.8). In addition, we noticed these results sustained throughout 2018, to date.

5. Conclusions
A bundled and step-wise approach associated with consistent education was able to achieve a decrease in urinary catheter usage and CAUTI rates. Utilization of EMR tools and new, evidence-based alternative solutions to indwelling urinary catheters are important in successful implementation of a CAUTI prevention program.

6. References
1. CDC. HAI.CAUTI. https://www.cdc.gov/hai/cautii.html