A Program to Limit Urinary Catheter Use at an Acute Care Hospital

by

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INTRODUCTION
Urinary Catheter associated infections are the most common hospital acquired infections and are associated with a 300% increase in mortality. Although various methods have been employed to reduce this incidence none has been uniformly successful. Although many skilled nursing facilities and subacute nursing units have dramatically reduced their use of these catheters, urinary catheters are probably overused in acute care hospitals. It has recently been reported that little is being done in the United States to limit catheter related infections, although efforts to limit catheters showed some promising results in surgical patients. With the advent of new super absorbent diapers and underpads it seemed possible to limit their use in an acute facility. The ability to measure accurate outputs can be achieved by use of a scale.

The economic rationale of avoiding the use of Foley catheters is fairly straightforward. Our cost of a Foley kit with silver coated catheters is $14 and the cost of two superabsorbent underpads, each holding up to 1500 cc of urine while maintaining dry contact surfaces, is $1.78 per day ($0.89 per pad). Diapers, for use when patients are being moved or transported, cost $1.18 per day ($0.59 per diaper). The cost of the pads of the diapers is less than the cost of the silver coated catheters until eleventh hospital day. The pads or diapers are weighable on an inexpensive scale, allowing for accurate intake and output measurements.

We undertook a program to try to reduce the use of Foley catheters in the ICU step down units of an urban 389 bed acute care general hospital.

METHODS
We chose our DOU and Telemetry units (ICU step down units) for this project. These units have a total of 60 beds with an average occupancy of 83%. We observed the use of silver coated Foley catheters and the incidence of nosocomial urinary tract infections during a baseline period of three months.

A program was implemented where nursing staff was educated in the properties and use of super absorbent adult diapers or pads (Medline Restore™). Pads were used routinely and diapers were used during transport or when being mobilized. Scales for weighing the pads or diapers were obtained and staff and physicians were shown the accuracy of measuring output by weighing the product before and after a measured weight of water was added. Wound care nursing opinion was solicited regarding the use of Foley catheters in patients with decubitus ulcers. Indications for urinary catheters were developed:

1. physician order for hourly urinary output reporting
2. inability to void spontaneously (usually due to obstruction)
3. active urinary tract infection in patients with stage 3 or 4 sacral decubitus ulcer
4. obvious inflammation of the perineum as determined by wound care nurse

If a patient had none of these indications, no catheter was requested by the nursing staff, and if a patient had a catheter already, a request to the physician for a discontinuance order was initiated.
The use of Foley catheters and nosocomial urinary tract infections was then observed during an intervention period of three months. Nosocomial infection data was collected by Infection Prevention personnel, who were not involved with the study. Nosocomial infections were defined as urine cultures with greater than 100,000 organisms per cc after the third hospital day in patients with Foley catheters.

A nursing questionnaire was distributed to registered nurses on the involved units after the program had been in effect for three months. Anonymity was assured.

**RESULTS**

The average number of catheters in use during the baseline period was 330 catheters per 1000 patient days (average of 17 per 51 patients). Determination of catheter presence was determined daily at 5 pm. The date of the month of initiation of the project is on the x axis. With institution of the project the use fell to 190 catheters per 1000 patient days (9 per 48 patients) (p<.01). There were 1564 catheter days during the control period and 819 during the intervention period. There were 4692 patient days in the control period and 4416 patient days during the intervention period.

There were 5 nosocomial urinary tract infections during the three-month control period and two during the three-month intervention period. During the control and intervention periods the infection rate was 3.2 and 2.4 hospital-acquired UTIs, respectively per 1000 catheter days.

<table>
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<tr>
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<th>Catheter days per 1000 patient days</th>
<th>Nosocomial UTIs per 1000 catheter days</th>
<th>Nosocomial UTIs per 1000 patient days</th>
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<tbody>
<tr>
<td>Control period</td>
<td>330</td>
<td>3.2</td>
<td>1.06</td>
</tr>
<tr>
<td>Intervention period</td>
<td>190 (p&lt;.01)</td>
<td>2.4 (p&lt;.10)</td>
<td>0.45 (p&lt;.05)</td>
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(p< .10). The rate of nosocomial UTIs was 1.06 per 1000 patient days during the control period and 0.45 nosocomial UTIs per 1000 patient days during the intervention period (p<.01)

Nursing satisfaction results were as follows:

1. How would you rate the effect of the “No Foley Program” in terms of the difficulty of your job?
   - 30% no effect
   - 45% more difficult
   - 25% easier

2. How would you rate the effect of the “No Foley program” in terms of your personal job satisfaction?
   - 43% no effect
   - 52% greater satisfaction
   - 5% less satisfaction

3. What has the feedback from patients been?
   - 43% no feedback/no change
   - 21% improved comfort
   - 0% decreased comfort
   (does not total to 100, normalize)

4. What has feedback from physicians been?
   - 36% no feedback/no change
   - 9% resistance
   - 12% acceptance
   (does not total to 100, normalize)

**DISCUSSION**

Urinary tract infections decreased significantly during this period in proportion to the reduction in catheter use. The rate of infections per 100
catheter days did not decrease significantly, indicating that the reduction in infections was mainly due to the decrease in catheter use rather than other changes in patient care.

The reduction in catheter use was immediate and sustained. Few physician complaints occurred and there was no problem with nursing labor or satisfaction. In fact, most of the nursing staff was enthusiastic in their support for this program and responses to anonymous questionnaires indicate that it increased overall satisfaction among nursing personnel.

There did not seem to be any immediate downsides to this intervention, but the trial has only gone three months.

There are weaknesses in the study. It was not randomized, but used historical controls which were in line with previously published rates of infection¹. Newly mandated screening of admissions was not in effect during either period. This program might not be applicable to intensive care units where more frequent output measurements might be necessary.

This study indicates that Foley catheters are probably not necessary in a large percentage of non-intensive care patients and with newer devices, especially superabsorbent materials and accurate scales it may be possible to restrict their use. This could lead to a reduction in the one of the most common nosocomial infections which is the development of an Urinary Tract Infection.