

## **AWARENESS OF URINE FLOW IN PEOPLE WITH LONG-TERM URINARY CATHETERS**

### Hypothesis / aims of study

The purpose of this study was to acquire knowledge about urine flow in relation to fluid intake and urinary output, catheter blockage, and urinary tract infection (UTI) in people with long-term urinary catheters. Little is known about these relationships from the perspective of the patient. The specific aims were: (a) Identify bodily sensations and daily catheter care practices related to urine flow for people with long-term (over 4 months) catheterization; (b) Analyze the relationships between urine flow, fluid intake, catheter blockage, and UTI; and (c) Describe how UTI (in the past 12 months) was experienced by people with catheters.

### Study design, materials and methods

This community-based exploratory and descriptive study involved collection of three-day fluid intake and urinary diary data, followed by face to face tape-recorded interviews in participants' homes about practices related to catheter care. The researcher conducted all activities of the study, including recruitment of the sample, interviewing, data collection, analysis/interpretation of findings, and writing the report. Analysis of data involved descriptive statistics and content analysis of narrative data. The focus of content analysis was to identify what expert patients do to self-manage their catheters. Approval for the study was obtained at two Institutional Review Boards. Study participants were referred through primary care providers (urologists, nurse practitioners), through home care agency nurses, and through people with catheters who knew of others with the device. Incentives were paid to study participants and family members or caregivers assisting in measurements and the interview.

### Results

The sample, which was obtained in North Carolina in the U.S. from October 2002-June 2003, included 21 males and 9 females ranging in age from 23-96 years, and almost half were of minority groups. The mean length of time using an indwelling catheter was over 7 years (median 4 ½). Eighty percent had used several different forms of bladder drainage previously, such as self-catheterization or an external catheter. Fluid intake and urine output were higher than expected, with mean intake at 2779 mL.(SD 984) and output at 2538 mL.(SD 1108). Low fluid intake was believed to be associated with the development of UTI in 9 of 30 participants (30%), but tests of associations were not significant. Caffeine consumption varied widely, as did choice of fluids, with some people drinking only water. While urine flow frequently was disrupted by urinary sediment or kinks in tubing, UTI was significantly related only to traumatic catheter manipulations or catheter blockage. Catheter manipulations causing difficulty included: (1) "rough" catheter insertions (e.g., too much force during insertion) (Chi sq. 10.62, p. 005 df 2); (2) "difficult" insertions (e.g., prostate obstructing urethra) (Chi Sq. 7.05, p. 029, df 2); and (3) catheters that got "stuck" during removal (Chi Sq. 3.77, p.05, df 2). Catheter blockage also was significantly related to UTI. Out of 16 who had unscheduled catheter changes due to blockage, over half (9 of 16) had two or more UTIs in the past year, compared with only 1 of 14 with no blockage (Chi Sq 8.62, p. 013, df 2).

### Interpretation of results

Tests of association suggest that catheter manipulations and blockage contributed to UTI, but sediment and kinks in the tubing did not. People may have learned to recognize their sensations of urine flow disruption early enough to prevent problems from developing further. The relationship of fluid intake and UTI is not cleared defined, and further study is warranted. Symptoms of UTI varied considerably by individual, and people learned to notice their own patterns of UTI so they could act quickly when symptoms developed. Many practical tips were shared on how they pay attention to urine flow, what they believe causes UTI, and what they do to minimize catheter-related problems, such as increasing fluid intake.

Concluding message

Consistent fluid intake and keen awareness of the catheter and tubing reflected sophisticated levels of self monitoring. Information from this study is being used to develop behavioural interventions to teach people to monitor and adjust urine flow, particularly those new to a catheter or who are having difficulties. Skill in self-monitoring techniques in people with catheters is believed to be important in preventing serious catheter related problems like UTI and catheter blockage.

**FUNDING: National Institute of Nursing Research (USA)**