



Urinary Catheters for Intermittent Catheterization-What's the Evidence?

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Disclosures

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Newman DK, Rovner ES & Wein AJ. (2018). *Clinical Application of Urologic Catheters and Products*. Switzerland: Springer International Publishing.
Newman DK, Wyman JF, Welch, V (2016) *Core Curriculum for Urologic Nursing, First edition*, Society of Urologic Nurses and Associates.

Learning Objectives

After completing this activity, participants should be better able to:

1. Identify the indications and short- and long-term complications of intermittent catheterization (IC).
2. Classify components of IC.
3. Differentiate between catheter re-use and single use.
4. Identify current evidence-based research and application to clinical practice.
5. Define the urologic nurses role in educating and monitoring patients on intermittent self-catheterization (ISC).

Intermittent Catheterization (IC)

- **Definition:**
 - Insertion of a catheter into the bladder to allow for drainage
 - Removed after drainage (referred to as “in and out”)
- **Regular bladder emptying benefit:**
 - Reduces intravesical pressure
 - Improves blood circulation in the bladder wall making the bladder mucous membrane more resistant to infectious bacteria
- **Indications:**
 - Urinary retention
 - Incomplete bladder emptying

Newman, D.K. (2021). Intermittent self-catheterization patient education checklist. *Urologic Nursing*, March-April, 41(2), 97-109
Newman & Wilson. (2011). Review of intermittent catheterization and current best practices. *Urologic Nursing*, 31(1),12-28.

Terminology

- Intermittent catheterization (IC)
- Clean intermittent catheterization (CIC)
- Intermittent Self-catheterization (ISC)
- Clean intermittent Self-catheterization (CISC)
 - Single-use
 - Re-use

“The Devil is in the Details”



Intermittent Catheterization Evidence-based

- 1st line of treatment in neurogenic lower urinary tract dysfunction (NLUTD)
- Preferred method
- Less complications
- Better outcome
- Effective & safe in the short-term & long-term use
- Key factors for a successful outcome:
 - Adequate frequency of IC
 - Non-traumatizing insertion technique
 - Suitable catheter materials
 - Complete bladder emptying

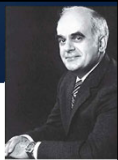
NLUTD: Definition

- Dysfunction of the lower urinary tract secondary to damage or disease in the neurologic system with the resulting dysfunction directly related to the level of the injury

Ginsberg DA, Boone TB, Cameron AP, Gousse A, Kaufman MR, Keays E, Kennedy MJ, Lemack GE, Rovner ES, Souter LH, Yang CC, Kraus SR. The AUA/SUFU Guideline on Adult Neurogenic Lower Urinary Tract Dysfunction: Treatment and Follow-up. J Urol. 2021 Nov;206(5):1106-1113.

Ginsberg DA, Boone TB, Cameron AP, Gousse A, Kaufman MR, Keays E, Kennedy MJ, Lemack GE, Rovner ES, Souter LH, Yang CC, Kraus SR. The AUA/SUFU Guideline on Adult Neurogenic Lower Urinary Tract Dysfunction: Diagnosis and Evaluation. J Urol. 2021 Nov;206(5):1097-1105.

Jack Lapidès, MD



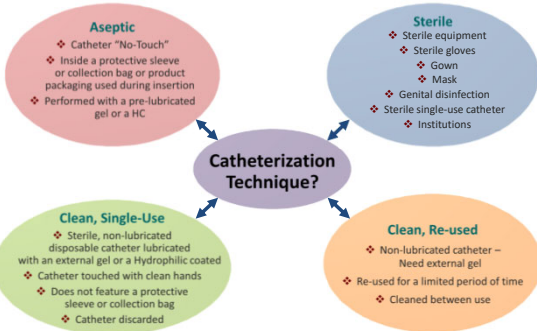
- Coined:
 - “Intermittent, Clean, Self-catheterization or CIC”
- Technique (12 F, 2 M):
 - Patient washes hands with soap and water
 - Catheter cleaning
 - “Use small Tupperware or margarine plastic container for sterilizing the catheter with a detergent”

Infections occurred:

- Not cleaning with “detergent”, just soap and water
- Dropped catheter and reused without cleaning

Lapidès, Diokno, Silber, Lowe [1972] Clean, intermittent self-catheterization in the treatment of urinary disease. J Urol, 107: 458–461.

Best Practices That Help Prevent IC- Related Infections



Problems with Catheter Reuse

- Reuse is “Off-Label”
- Need for Storage
- No guidelines/reports on:
 - Number of times catheter can or is being reused (e.g. 24 hours, 7 days)
 - Cleaning technique
- Not supported by regulatory requirements
- Risk for recurrent UTIs

Häkansson MÅ. (2014) Reuse versus single-use catheters for intermittent catheterization: what is safe and preferred? Review of current status. Spinal Cord. 52(7):511-6.

Distribution of any UTI in relation to Catheter Re-Use Evidence-based

Duration	Single use n=11	Re-use n=12
Symptomatic UTI Week 8	2 / 10 (20%)	2 / 12 (17%)
Symptomatic UTI Week 16	2 / 9 (22%)	1 / 11 (9%)
Proven Bacterial Cystitis Week 8	1 / 10 (10%)	0/12 (0%)
Proven Bacterial Cystitis Week 16	2 / 9 (22%)	2 / 11 (18%)
Asymptomatic Bacteriuria Week 8	4/10 (40%)	4 / 12 (33%)
Asymptomatic Bacteriuria Week 16	1 / 9 (11%)	2 / 11 (18%)
Any Bacteriuria Wk 8	7 / 10 (70%)	6 / 12 (50%)
Any Bacteriuria Wk 16	5 / 9 (55%)	5 / 11 (45%)

Leek H, Stephenson Z, Reus A, Karantanis E, Moore KH. (2013) Clean intermittent selfcatheterisation: a randomised controlled crossover trial of single-use versus multiple re-use of non-coated catheters; is cystitis rate altered? NeuroUrol Urodyn; 32:759-760.

Test Methods to Demonstrate PVC Cleaning (laboratory) Evidence-based

- Milton Sterilizing Fluid
 - Milton concentrate (fluid or tablet) was diluted with tap water as described in the manufacturer's instructions, resulting in a 0.6% sodium hypochlorite final concentration.
 - Left to soak for 15 min and then rinsed with tap water
- Milton Method Combination
 - Washed with hot soapy water.
 - 1 squirt of liquid detergent was added to 40 mL tap water, mixed and left to soak for 5 min.
 - Rinsed with tap water.

Wilks SA, Morris NS, Thompson R, Prieto JA, Macaulay M, Moore KN, Keenil CW, Fader M. An effective evidence-based cleaning method for the safe reuse of intermittent urinary catheters: In vitro testing. NeuroUrol Urodyn. 2020 Mar;39(3):907-915. doi: 10.1002/nau.24296. Epub 2020 Mar 24.PMID: 32207551

Problems with Single-use Catheter

- Costly (patient, health care)
- Negative environmental impact

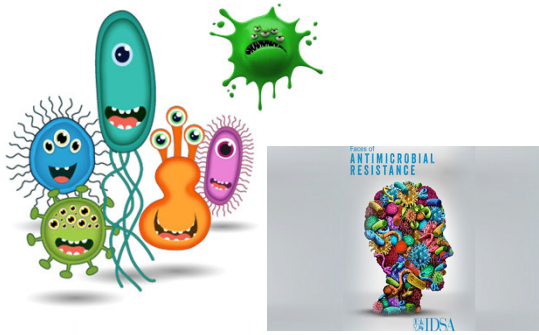
Håkansson MÅ. Reuse versus single-use catheters for intermittent catheterization: what is safe and preferred? Review of current status. Spinal Cord. 2014 Jul;52(7):511-6.

Catheterization Techniques –Current Evidence Infectious Disease Society of America (IDSA)

- Evidence is poor to moderate for recommending multiple-use catheters instead of single-use catheters with regard to bacteriuria or UTI
- Insufficient data for recommending a cleaning method for multiple-use catheters

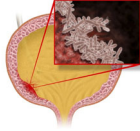
Hooton, T. M., Bradley, S. F., Cardenas, D. D., Colgan, R., Geerlings, S. E., Rice, J. C., et al: (2010) Diagnosis, prevention, and treatment of catheter-associated urinary tract infection in adults: 2009 International Clinical Practice Guidelines from the Infectious Diseases Society of America. Clin Infect Dis, 50: 625.

UTIs in Patient Performing ISC: A Growing Problem



The greatest burden with catheterization?

"Urinary tract infection can add significant health burden to the patients who undertake intermittent catheterization"

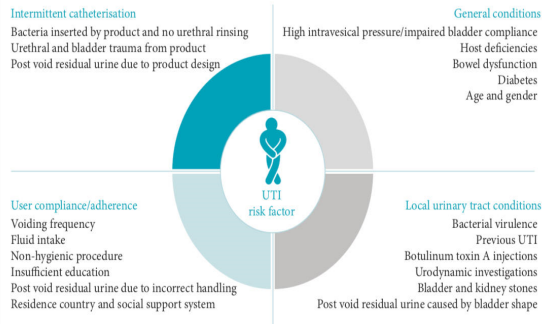


"...UTIs after SCI are a source of physical, emotional and social distress and disruption."

UTI is the most common complication and one of the greatest burden and fear for people practicing intermittent catheterization

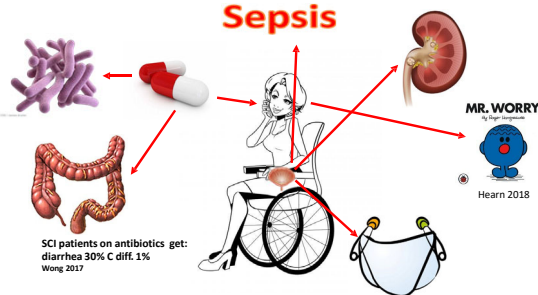
McClurg et al. Int J Nurs Stud. 2018;81:1-7
Hearn et al. Spinal Cord Ser Cases. 2018;4:12

UTI risk factors model



Kennelly, et al. Adult Neurogenic Lower Urinary Tract Dysfunction and Intermittent Catheterisation in a Community Setting: Risk Factors Model for Urinary Tract Infections. Adv Urol. 2019 Apr 2;2019:2757862


Sepsis



Clinical Study on Safety and Preference of Single vs. Reuse Catheters Evidence-based

Prospective, multicenter, clinical trial, 39 patients:

- 55 years (SD = 13)
- LUTD 33%, NLUTD 67%
- 79% normal hand function
- Normal (31%), reduced (38%), lacking (31%) urethral sensitivity
- Intermittent catheterization (IC):
 - 6 times/day (SD = 2)
 - 10 years (SD = 9)
 - Reused catheters for 21 days (SD = 48)



United States:
 • Philadelphia
 • Milwaukee
 • North Idaho

Australia:
 • Sydney
 • Brisbane
 • Melbourne

Study Design

<p>Inclusion</p> <ul style="list-style-type: none"> • Catheter reuse • Intermittent catheterization (≥4 times/day for at least 3 months) • Willing to use hydrophilic-coated (HC) single-use catheter for 4 weeks • Informed consent 	<p>Exclusion</p> <ul style="list-style-type: none"> • Antibiotics within 4 weeks prior study inclusion (!) • Addiction • Immunocompromised • Urologic/renal anatomical abnormalities • Severe fecal incontinence
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Outcomes

- Health-related quality of life (HRQoL)
 - Intermittent Self-Catheterization Questionnaire (ISC-Q)*
 - 24 statements describing: ease of use, convenience, discreteness, psychological well-being on a 5-graded response scale
- Patient satisfaction
 - Patient reported outcome
- Safety – bacteria contamination of reused catheter
 - Scanning electron microscope (SEM)
 - Culturing
- Safety – urological complication
 - Patient reported outcome

*Pinder et al. Clin Ther. 2022;34(2):292-313

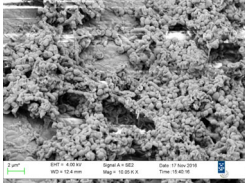
Patient Satisfaction

	Single-use HC	Reuse catheter	P-value
Discomfort or pain	33%	44%	0.0192
Satisfied or very satisfied	83%	54%	0.0241

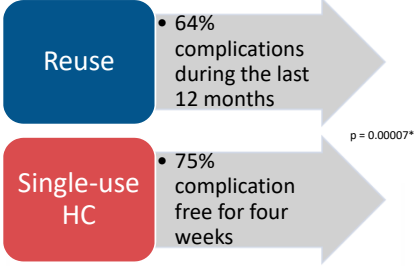
"83% (95%CI[67%, 94%]) preferred to continue using the single-use hydrophilic catheter"

Safety – Bacteria Contamination

- Reused Catheters:
 - 100% debris contamination
 - 74% bacteria contamination (95%CI[58%, 87%])
 - Staphylococcus
 - Enterococcus
 - Pseudomonas
 - Klebsiella
 - 18% biofilm



Safety – Urological Complication



*Binomial test.

Discussion

- Preference for IC with single-use HC when compared to catheter reuse.
- Single-use HC catheters were associated with a higher HRQoL.
- Catheter reuse pose a potential patient safety issue as high levels of bacteria and debris contamination were detected on the collected reused catheters.
- Results suggest single-use HC catheters as first and standard choice for people practicing IC due to LUTD/NLUTD.


UROLOGY - ORIGINAL PAPER

Intermittent catheterization with single- or multiple-reuse catheters: clinical study on safety and impact on quality of life

Diane K. Newman¹ · Peter W. New^{2,3,4} · Roxana Heriseanu⁵ · Sarunas Petronis⁶ · Joakim Häkansson⁷ · Maria A. Häkansson⁷ · Bonsan Bonne Lee⁸

Received: 30 October 2019 / Accepted: 26 February 2020 / Published online: 14 March 2020
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Use of Prophylactic Antibiotics Evidence-based

- **Objective:** To assess the benefit, harms and cost-effectiveness of antibiotic prophylaxis to prevent UTIs in people who perform CISC
- **Design:** Parallel-group, open-label, patient-randomised 12-month trial of allocated intervention with 3-monthly follow-up. Outcome assessors were blind to allocation. 
- **Setting:** 51 sites- UK

Pickard et al Continuous low-dose antibiotic prophylaxis to prevent urinary tract infection in adults who perform clean intermittent self-catheterisation: the ANTIC RCT. Health Technol Assess 2018;22(24).

Use of Prophylactic Antibiotics Evidence-based

- Participants: 404 adults performing CISC for > 12 months
 - Suffered at least 2 UTIs in the previous year
 - Had been hospitalized for a UTI in previous year
- Central randomization system using random block allocation
- Intervention – Antibiotics (n=203)
 - Nitrofurantoin 50 mg
 - Trimethoprim 100 mg
 - Cefalexin 250 mg
- Control - No Antibiotic Prophylaxis (n=201)



HEALTH TECHNOLOGY ASSESSMENT



Pickard et al Continuous low-dose antibiotic prophylaxis to prevent urinary tract infection in adults who perform clean intermittent self-catheterisation: the ANTIC RCT. Health Technol Assess 2018;22(24).

Use of Prophylactic Antibiotics

- Primary Outcome: Frequency of symptomatic antibiotic-treated UTI
- Results:
 - Frequency of symptomatic antibiotic-treated UTI reduce by 48%
 - Use of prophylaxis incurred an extra cost of £99 to prevent one UTI
 - Clear benefit for antibiotic prophylaxis in terms of reducing frequency of UTI for people carrying out CISC

The increase in antimicrobial resistance of pathogens may reduce the long-term efficacy of prophylaxis in individuals continuing to perform CISC and is also a major public health concern.

Pickard et al Continuous low-dose antibiotic prophylaxis to prevent urinary tract infection in adults who perform clean intermittent self-catheterisation: the ANTIC RCT. Health Technol Assess 2018;22(24).

Evidence-based

Gentamicin bladder instillations decrease symptomatic urinary tract infections in neurogenic bladder patients on intermittent catheterization

Lindsay Cox, MD¹; Chang He, MS¹; Jack Bevins, MD²; J. Quentin Clemens, MD³; T. Stoffel, MD⁴; Anne P. Cameron, MD¹

Off label

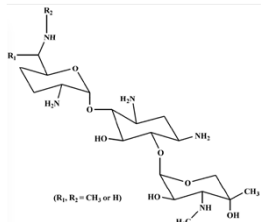
Cox et al Gentamicin bladder instillations decrease symptomatic urinary tract infections in neurogenic bladder patients on intermittent catheterization. Can Urol Assoc J. 2017 Sep;11(9):E350-E354

Gentamicin

- Aminoglycoside Antibiotic Concentration dependent killing
- Highly polar cation not absorbed in small intestine

Aims:

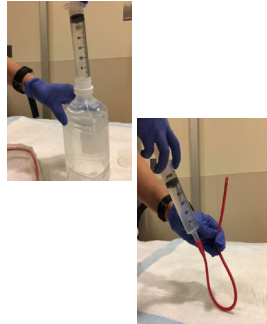
1. Determine if gentamicin bladder instillations reduce the rate of symptomatic UTI and/or reduce the use of oral and intravenous antibiotics in NGB patients on ISC who had a high rate of recurrent UTIs.
2. Examine the effects of intravesical gentamicin (intravesical antimicrobials (IVM)) on the bladder organisms and their resistance patterns detected on urine culture in this population.



(R₁, R₂ = CH₃ or H)

Gentamicin Instillations: Protocol

- Compounded formulation of 480 mg gentamicin diluted in 1 L normal saline.
- Daily gravity instilled dose of 30–60 ml (14.4–28.8 mg) solution instilled into the bladder (depending on bladder capacity) after drainage of urine is complete at the last evening catheterization
- Catheter left indwelling until the next catheterization.



Organism Characteristics

▼ **58% to 47%**
Multidrug-resistant organisms

★ **No increase in Gentamicin resistance**

Intermittent Self-Catheterization (ISC)

- Ideal/Successful Patient
 - Unobstructed urethra
 - Good vision
 - Good perineal hygiene
 - Compliant – motivated patient or caregiver
 - Ability to perform other self-care (e.g., dressing)
- Problem Patient
 - Obesity/large abdominal girth
 - Woman with abductor spasms

Newman, D.K. (2021). Intermittent self-catheterization patient education checklist. *Urologic Nursing*, 41(2); 97-109.
Lamin & Newman (2016) Clean Intermittent catheterization revisited. *Int J Nephrol Urol*. Jun;48(6):931-9.

Barriers to IC

- Age – should not be a barrier
- Fear – reservations because of fear of inability to perform
- Decreased perineal sensation
- Leg spasms/decreased flexibility or balance
- Decreased finger/hand dexterity
- Intentional hand/arm tremors
- Children
 - Exhibit frustration, anger, non-compliance
 - May need close parental supervision

Newman, D.K. (2021). Intermittent self-catheterization patient education checklist. *Urologic Nursing*, 41(2); 97-109.
Lamin & Newman (2016) Clean intermittent catheterization revisited. *Int J Nephrol Urol*. Jun;48(6):931-9.

IC Catheter Material & Types

Type	Characteristics
Non-latex	Clear, more rigid / firmer with a larger internal diameter, made from PVC (polyvinyl chloride)
Latex (red rubber)	More flexible but latex allergy could be a concern
Gel (pre-gelled and externally applied gel)	Use of water-soluble gel, user disposes of catheter after insertion, coefficient of Friction (CoF) not as low as hydrophilic
Hydrophilic Coated (HC) (hydrated with self-contained water or vapor or water packs)	Coated with a polymer that becomes slippery when exposed to water, low CoF. Higher osmolality coating appears gentler to urethral mucosa due to higher water content.

Newman, D.K. (2021). Methods and types of urinary catheters used for indwelling or intermittent catheterization. *Urologic Nursing*, 41(2); 111-117.

IC Insertion Technique

No-touch

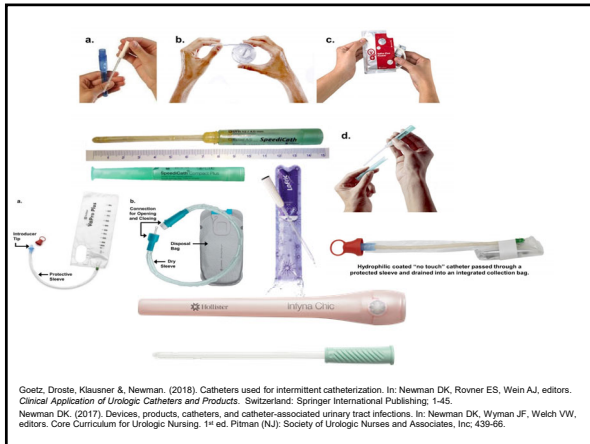
Catheter is inside a protective sleeve or collection bag or product packaging may be used to hold the catheter during insertion

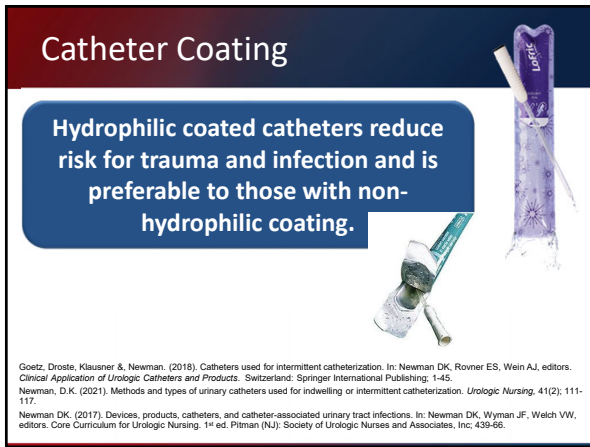
User or caregiver never touches the catheter

Can be performed with a pre-lubricated gel or hydrophilic catheter

Hydrophilic coated "no touch" catheter passed through a protected sleeve and drained into an integrated collection bag.

Goetz, Droste, Klausner & Newman. (2018). Catheters used for intermittent catheterization. In: Newman DK, Rovner ES, Wein AJ, editors. *Clinical Application of Urologic Catheters and Products*. Switzerland: Springer International Publishing; 1-45.
Newman, D.K. (2021). Methods and types of urinary catheters used for indwelling or intermittent catheterization. *Urologic Nursing*, 41(2); 111-117.
Newman DK. (2017). Devices, products, catheters, and catheter-associated urinary tract infections. In: Newman DK, Wyman JF, Welch VW, editors. *Core Curriculum for Urologic Nursing*, 1st ed. Staman (NJ): Society of Urologic Nurses and Associates, Inc.; 439-466.
Newman & Wilson. (2011). Review of intermittent catheterization and current best practices. [Review] *Urol Nurs*. 31(1):12-28, 48.





Hydrophilic Catheters: Meta-Analysis Evidence-based

Author, Year	Country or Area	Hydrophilic-Coated Catheters/Control	No. of Patients (N/C)	Age (y) (N/C)	Sex (M/F)		Outcomes	
					Hydrophilic Catheters	Control	Subjects with UTIs	Subjects with Hematuria
Cardenas et al, 2011	United States	Hydrophilic-coated (SpeedCath)/uncoated polyvinyl chloride catheters	100/100	35.1 ± 13.2/ 37.2 ± 14.4	79/21	82/18	41/76	23/34
Cardenas and Hoffman, 2009	United States	Hydrophilic (LoFric)/non-coated catheters	22/23	42.3 ± 10.4/ 40.1 ± 9.3	17/5	12/11	12/14	No mention
Ridder et al, 2005	Spain	Hydrophilic-coated (SpeedCath)/uncoated polyvinyl chloride catheters	61/62	37.5 ± 14.6/ 36.7 ± 14.6	61/0	62/0	39/51	55/59
Vapnek et al, 2003	New York	Hydrophilic-coated (LoFric)/standard polyvinyl chloride catheters	30/31	39.8 ± 12.9/ 39.6 ± 16.0	30/0	31/0	19/22	8/11
Sutherland et al, 1996	California	Hydrophilic-coated (LoFric)/nonhydrophilic polyvinyl chloride catheters	17/16	Boys (vague)	17/0	16/0	3/4	9/11
TOTAL			230/232		207/84	139/32	114/167	95/115

NOTE: Values are n, mean ± SD, or median (range). Abbreviations: H/C, hydrophilic-coated catheters/control; M/F, male/female.

Li L, Ye W, Ruan H, Yang B, Zhang S, Li L. (2013). Impact of hydrophilic catheters on urinary tract infections in people with spinal cord injury: systematic review and meta-analysis of randomized controlled trials. Arch Phys Med Rehabil, 94: 782-787.

Evolution of Hydrophilic catheters – what we need to communicate:

First generation catheters
Uncoated

Second generation catheters
Coated Hydrophilic

Next generation catheters
Foliclean™ Technology

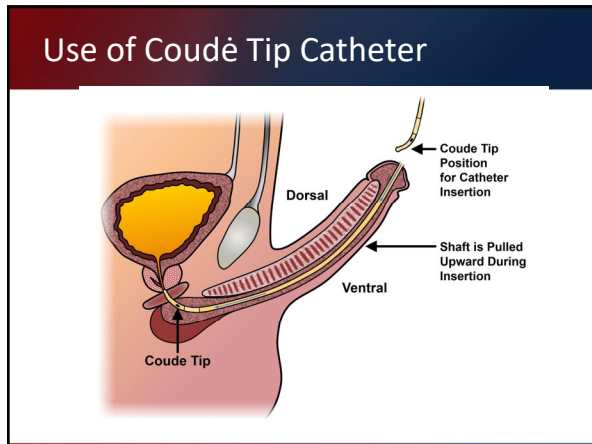
POP Note:
POP is used in 2016-18. Also used in coated hydrophilic catheters. It is the most common gel used in catheters. We don't use it in our catheters, but the only catheter to have our Foliclean technology removed. Hydrophilic does NOT gel. POP is not made with POP.
The ConvaTec™ One catheter is made without the use of POP.

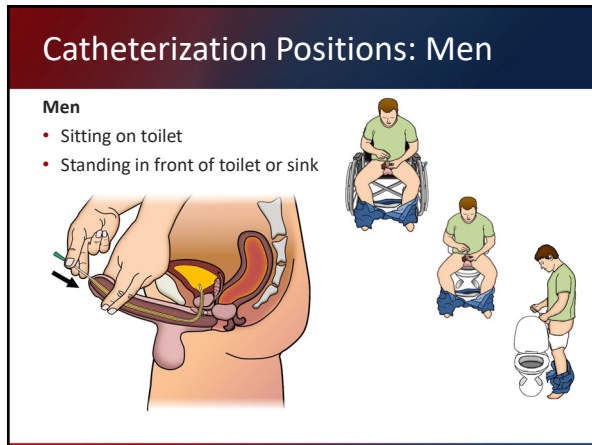
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Male Self-Catheterization

Catheterization Positions: Women

- Sitting on the toilet and lean back
- Squatting or standing over a container on the floor
- Squatting or standing over the toilet
- Standing with one leg on the toilet or bath
- Lying on a bed in a semi-sitting position with good lightening







RESULTS OF THE PATIENT REPORT OF INTERMITTENT CATHETERIZATION EXPERIENCE (PRICE) STUDY

Evidence-based

- Objectives of this study
 - To better understand practices with and attitudes towards intermittent self-catheterization (ISC) in patients who have been performing ISC for at least 6 months
 - To use a validated ISC related quality of life questionnaire (ISC-Q & ISC-D) to determine ease of use, discreteness, difficulty with catheterization, and psychological well-being considerations with ISC

Although ISC is the gold standard for managing chronic urinary retention, little is known about the patients' actual experience and quality of life

Methodology

- Prospective, cross-sectional, 6 distinct rehabilitation & urology practices
- Inclusion criteria
 - 18 years of age or older
 - Performing ISC independently for greater than six months
- Data collected
 - Demographics, medical (urologic) history
 - ISC habit questionnaire
 - Intermittent Self-Catheterization Questionnaire (ISC-Q)
 - 24 question, validated
 - Ease of Use, Convenience, Discreteness, Psychological Well-Being

CLINICAL ARTICLE WILEY

Results of the patient report of intermittent catheterization experience (price) study

Daniel Robinson¹ | Diane K. Newman² | Justin B. Ziemba³ | Alan Weiss⁴ |
 Hanne Skambak⁵ | Rita G. Hamilton⁶ | Amanda Colquhoun⁷ |
 Leah Holderness⁸ | Tamara King⁹ | Angela Jackson¹⁰ | Thanh Tran¹¹ |
 George Liu¹² | Ariana L. Smith¹³

PRICE - Enrollment (n=200)

Site	Total	Male	Female
Florida – University of South Florida, Tampa	11	10	1
Georgia - Shepherd Center, Atlanta	51	40	11
Maryland - Chesapeake Urology & Kernan Rehab	7	4	3
Ohio - University Hospitals, Case Medical Center	8	2	6
Pennsylvania - University of Pennsylvania, Penn Urology	69	43	26
Texas - Baylor Scott & White Institute for Rehabilitation, Dallas	54	41	13

Results

- Participants (n=200)
 - 70% Male, 73.5% Caucasian
 - 90% had been performing ISC for 1 year, 49% for 5 or more years
 - Spinal cord injury most common
 - >90% single use catheters and do not require assistance
 - 44% had recent UTI
- ISC-Q Results
 - Overall satisfaction score: 70.4
 - Ease of Use: 82.0,
 - Discreetness: 75.4
 - Psychological Well-Being: 64.3
 - Convenience: 60.0

Main/Primary Reason For The Need of Intermittent Catheterization (n=200)

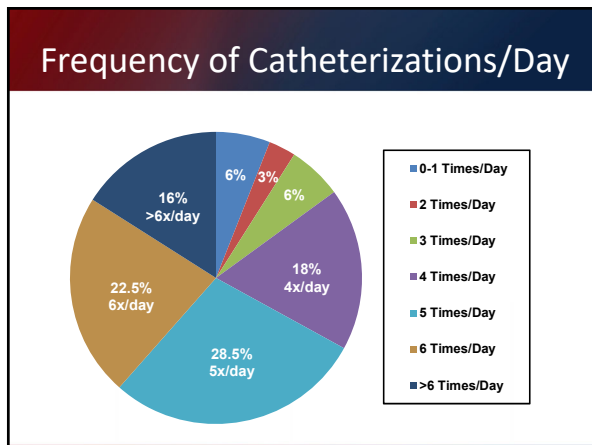
Reason	n (%)
Spinal Cord Injury (Paraplegia & Tetraplegia)	109 (54.5)
Retention/Incomplete Bladder Emptying	46 (23.0)
Urethral Obstruction/Stricture/Bladder Neck Contracture	10 (5.0)
Spinal Bifida	15 (7.5)
Other	5 (2.5)
Transverse myelitis	2 (1.0)
Multiple Sclerosis	5 (2.5)
Post-op Retention	5 (2.5)
Augmented Bladder, Catheterizable Stoma	3 (1.8)

UTIs Diagnosed & Treated with Antibiotics in the Past 6 Months

Number of UTIs	n (%)
None	96 (48.0)
One	43 (21.5)
Two	25 (12.5)
Three	9 (4.5)
Four	7 (3.5)
Do Not Know	20 (10)

Type of Catheter

Type of Catheter Used	n (%)
Polyvinyl Chloride (PVC)/Clear	58 (29%)
Catheter with gel lubrication	42 (21%)
Hydrophilic with water sachet	35 (17.5%)
Hydrophilic with fluid coating	29 (14.5%)
Red rubber catheter	13 (6.5%)
Other	16 (8%)
Did not know	7 (3.5%)





Catheter Tip

Tip	Patient Report n (%)
Straight	131(65.5)
Curved	66 (33)
Do Not Know	3 (1.6)
Flex-Tip	1 (0.5%)

Usual Position for Catheterization

Position	Patient Report n (%)
Sitting on the toilet	44 (22.0)
Sitting on chair/wheelchair	89 (44.5)
Sitting on side of the bed	5 (2.5)
Lying down on bed	19 (9.5)
Standing in front of or over the toilet	59 (29.5)

Touches Catheter During Insertion

	n (%)
Yes	68 (34.0)
No	118 (59.0)
No, I use an insertion aid that comes with my product	13 (6.5)
No, I use a separate insertion device	1 (0.5)

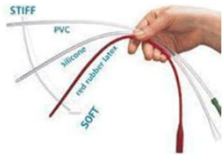
Intermittent Self-catheterization Questionnaire (ISC-Q)

- Majority indicated catheters are easy to use, discreet, and have confidence with ability to do ISC
- Some report challenges with carrying enough catheters when traveling, a feeling of self-consciousness due to the need for ISC, and concern about the risk of long-term problems from ISC.

Pinder et al. (2012) Development and psychometric validation of the intermittent self-catheterization questionnaire. Clin Ther 34: 2302-2313

Discussion Points

- PRICE study is unique
- Significant variability
 - Catheter type
 - Frequency of ISC per day
 - UTI experience
- Notable conclusions
 - Chronicity of ISC dependence
 - Confidence
 - Discreteness and ease of use
- Future directions
 - How can we improve travel convenience?
 - What are the long-term implications of ISC?
 - Commonalities in those who develop more UTIs including HR QoL considerations
 - ICDQ results



Summary

- Ninety percent of participants had been performing ISC for > 1 year, demonstrating the chronicity of the conditions that commonly lead to ISC and thus the importance of understanding the QoL impact of ISC on patients
- Believe this is the first survey of its kind to be done in patients performing ISC in urology and rehabilitation centers in the U.S. that attempted to quantify multiple components of the patient experience when performing ISC using the validated ISC-Q
- UTIs were common and may contribute to concerns about long term implications of ISC.

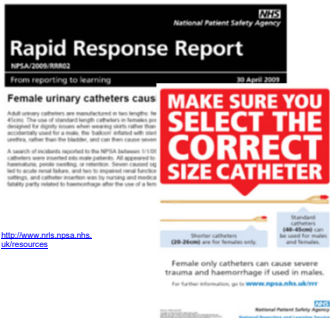
Concluding Message

- Preference for IC with single-use HC when compared to catheter reuse.
- Single-use HC catheters were associated with a higher HRQoL.
- Catheter reuse pose a potential patient safety issue as high levels of bacteria and debris contamination were detected on the collected reused catheters.
- Results suggest single-use HC catheters as first and standard choice for people practicing IC due to LUTD/NLUTD.

Implications

- Confidence in the ability to use the catheter is important for all ISC patients and may be the result of successful education as well as catheter design
- Urologic nurses can successfully conduct research using their patient population and validated questionnaires.
- Results can inform practice and future research.

.....and care can go wrong!



Rapid Response Report
NPSA 2008-08802
From reporting to learning
20 April 2009

Female urinary catheters cause

MAKE SURE YOU SELECT THE CORRECT SIZE CATHETER

Female only catheters can cause severe trauma and haemorrhage if used in males. For further information, go to www.npsa.nhs.uk

<http://www.npsa.nhs.uk/resources>

Nursing Documentation: Court Faults Nurse For Failing To Note Time Of Catheter Removal.


Immediately prior to her hysterectomy, the patient was given an indwelling urinary catheter to facilitate post-operative drainage. On the morning after surgery, the catheter was removed by one of the hospital's nurses.

The nurse noted in the patient's chart that she had removed the catheter, but did not record the time of day. Later that day, the patient was unable to void her urine. According to the court record, because the nurse who removed the catheter did not record the time of day, there was a delay in inserting another catheter to enable the patient to void. The Court of Appeals of Georgia faulted the nurse who removed the catheter. The court ruled it was negligent nursing practice for the nurse not to have made note of the time of day when the catheter was removed.

<http://www.nursinglaw.com/catheter3.pdf>

References

1. Crescenze IM, Myers JB, Lenherr SM, et al. Predictors of low urinary quality of life in spinal cord injury patients on clean intermittent catheterization. *NeuroUrol Urodyn*. 2019;38(5):1332-1338.
2. Fumincelli L, Mazzo A, Martins JCA, Henriques PMD, Cardoso D, Rodrigues MA. Quality of Life of Intermittent Urinary Catheterization Users and Their Caregivers: A Scoping Review. *Worldviews Evid Based Nurs*. 2017;14(4):324-333.
3. Guinet-Lacoste A, Jousse M, Verollet D, et al. Validation of the InCaSaQ, a new tool for the evaluation of patient satisfaction with clean intermittent self-catheterization. *Ann Phys Rehabil Med*. 2014;57(3):159-168.
4. Lamin E, Newman DK. Clean intermittent catheterization revisited. *Int Urol Nephrol*. 2016;48(6):931-939.
5. Newman, D.K. (2021). Intermittent self-catheterization patient education checklist. *Urologic Nursing*, March-April, 41(2): 97-109.
6. Newman, D.K. (2021). Methods and types of urinary catheters used for indwelling or intermittent catheterization. *Urologic Nursing*, March-April, 41(2): 111-117.
7. Newman DK, New PW, Heriseanu R, et al. Intermittent catheterization with single- or multiple-reuse catheters: clinical study on safety and impact on quality of life. *Int Urol Nephrol*. 2020;52(8):1443-1451.
8. Newman, D.K., New, P.W., Heriseanu, R., et al. (2020). Intermittent catheterization with single- or multiple-reuse catheters: clinical study on safety and impact on quality of life. *Int Urol Nephrol*. Aug;52(8):1443-1451.
9. Pinder B, Lloyd AJ, Elwick H, Denys P, Marley J, Bonniaud V. Development and psychometric validation of the intermittent self-catheterization questionnaire. *Clin Ther*. 2012;34(12):2302-2313.
10. Roberson D, Newman, D.K., Ziemba, J.B., et al. (2021) Results of the patient report of intermittent catheterization experience (PRICE) study. *NeuroUrol Urodyn*. Nov;40(8):2008-2019. doi: 10.1002/nau.24786.
11. Wilks SA, Morris NS, Thompson R, Prieto JA, Macaulay M, Moore KN, Keivil CW, Fader M. An effective evidence-based cleaning method for the safe reuse of intermittent urinary catheters: In vitro testing. *NeuroUrol Urodyn*. 2020 Mar;39(3):907-915. doi: 10.1002/nau.24296. Epub 2020 Mar 24. PMID: 32207551



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UroToday: Urinary Catheter Center
<https://www.urotoday.com/center-of-excellence/cauti.html>
