Aims of Workshop
At the time where intermittent catheterisation is recognised as the basic management technique of chronic urinary retention for spinal cord diseases management, this workshop led by the NU Promotion Committee will focus on practical issues and provide tips and tricks.

Learning Objectives
To promote basic knowledge on IC for caregivers: teaching patients, answering questions and ensure good practice and follow-up.

Learning Outcomes
Audience should be able to teach and promote it, whatever the country of practice and level of available materials.

Target Audience
Nurses, Physician assistant, residents and fellows, more generally caregivers dedicated to spinal cord diseases.

Advanced/Basic
Basic

Conditions for Learning
Interactive and practical discussions.

Suggested Learning before Workshop Attendance
Guidelines.

Suggested Reading
ICI 2017 references.
Intermittent catheterization (IC), including intermittent self-catheterization (ISC), aims to resume normal bladder storage and regularly complete urine evacuation. They avoid some of the complications of indwelling catheterization (IDC). IC can improve incontinence, or make patients with neurogenic bladder continent, if; bladder capacity is sufficient, bladder pressure is kept low, urethral resistance is adequate, and fluid intake is balanced with frequency of catheterization.

Most appropriate technique and catheter depend on individual anatomic, social and economic possibilities. Two main techniques have been adopted, aseptic IC (IC) and clean IC (CIC). The aseptic non-touch technique involves the use of sterile materials each time and insertion of the catheter “out of the sheath” without touching it directly (“nontouch technique”). De Ritter et al. [21] compared SpeediCath hydrophilic-coated catheters versus uncoated polyvinyl chloride (PVC) catheters, in SCI patients. This 1-year, prospective, open, parallel, comparative, randomised, multi centre study indicated a beneficial effect regarding UTI when using hydrophilic-coated catheters.

Kovindah and adersbacher investigated whether a silicone catheter reused over years for clean IC was safe for men with SCI. Reused silicone catheter appeared to function as well as disposable. However, to reuse urinary catheters, one should consider the increased risk of infection. The authors suggest that for SCI patients in developing countries, CIC with a reusable silicone catheter may be a suitable and safe choice if one cleans and applies it. A systematic Cochrane review summarizing current evidence on the relationship between sterile single-use catheters or clean reused catheters and the incidence of UTIs concluded that there are no definitive studies illustrating that incidence of UTIs is affected by sterile single-use or coated catheters compared to clean reused catheters.

However, the current research base is weak and design issues are significant. Based on the current data, it is not possible to state that one catheter method is better than another and further research is needed. Research to evaluate clean vs. sterile PVC catheter use and coated vs. uncoated catheter use (both sterile and reused), is needed. It seems that single or multiple use silicone catheters are becoming more popular especially in Asian countries, studies are available only from the Japanese silicone catheter.

Conclusions
- IC in the neurogenic bladder is effective and safe in short and long term.
- Complications such as UTI are regularly seen and seem to be related to both, the catheterization and the preexisting LUT.
- Urethral and bladder complications seem to increase in the long-term.
- In order to reduce and prevent complications, appropriate materials and correct techniques should be taught.

Recommendations
- IC is the first choice treatment for those with inability to empty the bladder adequately in neurogenic voiding dysfunction and valuable for achieving continence.
- Proper education and teaching are necessary to achieve a good outcome.
- To prevent and reduce complications, a nontraumatizing technique should be achieved.
- Due to the poor quality of studies it is currently not possible to state whether any IC method or catheter type is advantageous.

Challenges in performing ISC in patients with neurological disease and the role of appliances

Collette Haslam

There are many challenges for all patients contemplating and learning ISC however for the patient with a neurological disease these can be manifested by the idiosyncrasies of the disease and disability. These challenges can affect compliance in performing ISC.

Exploring the factors that affect our patients can improve compliance in this patient group. The commonly reported internal factors such as the physical disabilities in positioning, dexterity and cognition with the issues of visual impairment and anatomical barriers that may be an also an issue are often reported. Our neurological disease patients have the above issues alongside the usual psychological, misconceptions and anxiety issues associated with ISC.

When we discuss and teach ISC we at times omit consideration of the complexity of the external factors that may impact on the daily ability to ISC.

The guidance from the UK Department of Health Good Practice in Continence Services and the National Service Framework for Long Term Conditions suggests that patients have access to an integrated continence service. This should ensure training, support and follow-up, however this has been found to vary in various areas of the country which may also be an international consideration. Other external factors such as inadequate toilet facilities in public areas – washing, transferring and placement for catheterisation supplies being named as an issue.
The choice of catheter and appliances to assist ISC requires a knowledgeable instructor in ISC teaching, as it is through experience and working with neurological patients that the instructor learns to adapt the teaching methods and available appliances to the individual.

It is often through working with the different patient groups that we as health care professionals gain knowledge about the available appliances, and adaptations to existing appliances. These can aid the patient in catheterisation and the ability to continue if their neurological condition progresses.

The challenging aspects to patients learning and maintaining their ability in self catheterisation a service which has a broad knowledge base will best serve this group of patients.

**What is the patient’s perspective on ISC**

*Doreen Mc Clurg*

CISC is now the gold standard for patients with urinary retention and is perceived as being a relatively simple and quick procedure which allows patients to independently manage bladder emptying in the community, reducing bladder symptoms, and also safe-guarding renal functions. However, it has also shown that compliance dwindles with time with retrospective reviews reporting compliance of 35% to 84%. During the workshop findings from several prospective cohort studies will be discussed which have identified the steps some patients go through before agreeing to try CISC. The key factors which seem to make compliance, especially in the long-term will also be discussed as will measures that teaching clinicians could introduce to help bring about the behavioural change required for initiation and continuation of use. The qualitative findings from the COSMOS study will be presented. In this study 20 patients were interviewed at the start of their training in the use of CISC and again 8 months later. In addition the views of 10 patients who had been advised to use CISC but during the study period and not agreed to try will be reported and the importance of the patient’s ‘head being in the right place’ is highlighted.

**Complications of IC in neurological patients-Urinary tract infections and Urethral trauma**

*Pawan Vasudeva*

Intermittent Catheterization (IC) is an effective bladder drainage method in patients with neurogenic lower urinary tract dysfunction (NLUTD) associated with incomplete bladder emptying. While IC is preferred over other forms of bladder emptying (indwelling catheter, reflex voiding etc) and has revolutionized bladder management in NLUTD patients, it is not without its own complications.

**Urinary Tract Infection:**

One of the most frequent complications associated with IC is urinary tract infection (UTI). The National Institute on Disability and Rehabilitation consensus statement defined UTI in NLUTD spinal cord injury patients as bacteriuria WITH tissue invasion and resultant tissue response WITH signs /or symptoms. Quantitative urine culture criteria that have optimal sensitivity and specificity for diagnosis of bacteriuria include: For IC specimen: >10^2 CFU/ml, For clean void into condom collection devices specimen: >10^4 CFU/ml, For indwelling catheters/suprapubic aspirates: any detectable concentration. Although UTI is common in the neurological population on IC, the actual incidence rates vary widely in the literature. This may be attributed to multiple factors including the criteria used for diagnosing UTI, different techniques of IC, varying frequencies of IC, different prophylaxis regimens and so on.

**Prevention:**

Patient education and emphasis on hygiene, adherence to catheterization protocol and proper catheterization technique likely play an important role in UTI prevention in such patients. Various catheter practices have been promoted with the hope to reduce the rates of UTI’s. These include:

- A “Aseptic/Sterile” technique over “Clean” IC
- Single use catheter over a multiple use catheter
- Hydrophilic coated over non coated
- Antimicrobial prophylaxis over no antimicrobial prophylaxis

Currently there is insufficient data to show superiority of one catheter practice over the other.

**Treatment:**

Once a symptomatic UTI is documented, it must be treated promptly with appropriate antimicrobials. Asymptomatic bacteriuria does not require to be treated with antibiotics.
Genital Infection (Epididymitis):
Epididymitis has been reported in patients undergoing IC with an incidence of 2-28%. Although overall sperm quality is better in NLUTD patients on IC than on an indwelling catheter, an episode of epididymitis can decrease sperm counts and lower fertility potential of such patients.

Urethral Complications:
Urethral friction and trauma consequent to IC may result in urethral bleed, false passage, meatal stenosis and urethral stricture. Prevention:
Gentle introduction and adequate lubrication are the key points for prevention. While there is some evidence that a hydrophilic catheter may be less traumatic than the non coated catheters, the data is still evolving.
Treatment
In case an IC leads to urethral trauma and false passage, a course of antibiotic and six weeks of indwelling catheter is usually sufficient treatment for the false passage to disappear and IC to be restarted.

Miscellaneous complications:
IC is associated with a much lower incidence of complications like bladder/renal stones, worsening bladder compliance, hydronephrosis and vesicoureteral reflux when compared to an indwelling catheter.

Alternatives to bladder emptying if IC is not suitable: Crede manoeuvre, triggered voiding, indwelling catheterisation
Emmanuel J, BRASCHI (Urol), MD

Adult neurogenic lower urinary tract dysfunction (ANLUTD) is prevalent in many neurological diseases. The condition is known to be life threatening if not properly managed. The conservative treatment is in almost all cases the first to give and will remain the primary choice in the majority of patients with neurogenic bladder. Treatment will depend on the type of underlying disease, on the bladder dysfunction, urethral conditions, its natural evolution but also on the patient’s general condition, patient and family’s wishes and the available resources. Urodynamic testing will be necessary in many patients to gain more complete diagnosis of how the neurogenic dysfunction has changed the function of different components in the lower urinary tract and their interaction. Decisions on treatment should depend on an accurate diagnosis of what type of neurologic dysfunction is present in a specific patient. Not only the bladder activity but also the coordination with the bladder neck and the striated external sphincter needs to be studied and documented.

Intermittent catheterization (IC) is the first choice treatment for those with inability to empty the bladder adequately and safely in neurogenic voiding dysfunction. It is a valuable tool for achieving continence. In general, the purpose of catheterization is to empty the bladder and to resume normal bladder storage and regularly complete urine evacuation. With IC there is no need to leave the catheter in the LUT all the time, thus avoiding complications of indwelling catheterization (ID).

However, not all patients are candidates for IC. It is when we must choose a second option that best suits the reality of our patient... Different methods of emptying are available:

A) Behavioral therapy: Triggered reflex voiding, Bladder expression (Crede and Valsalva Maneuver)
B) Indwelling urethral catheters – transurethrally (ID) / suprapubically (SC)
C) Condom catheter and external appliances

Although these methods have decades of existence, they continue as valid options and can be a very good solution in the correctly selected patient. Although some techniques such as triggered voiding and bladder expression have lost their predominant position.

Indications, limitations, complications, long-term acceptance, how, when, why, tips and tricks from the literature and from personal experience in a National Rehabilitation Center in Argentina will be discussed.

Take Home Message:
Intermittent catheterization (IC) is the first option in patients with neurological disease. However, not all are candidates and their indication should not be forced. If all the conditions required to perform CI are not assured, a second option must be chosen in order to adapt to each patient in particular and allow us to preserve their renal function and grant an acceptable quality of life. With tips and tricks these objectives can be achieved.
Rizwan Hamid

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ICI guidelines for intermittent catheterization & indications for neurological patients

Rizwan Hamid FRCS(Urol), MD (Res)
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Introduction

- Why should we proactively treat NBD after SCI
- Principles of management
- Guidelines
- Complications of catheters
- Controversies in IC
- Summary

Renal dysfunction and Mortality

- World War I - 80%
- World War II - 40%
- Korean War - 25%
- Vietnam War - Minimal
- Today - Negligible

Renal failure no longer the leading cause

- Antibiotics
- Catheterisation (Guttman)
- Understanding complications of the “high pressure bladder”
- Education to patient/family
- Follow-up Testing

Aims of treatment

- Restoration of normal LUT function
- Maintaining continence
- Protection of upper tract
- Maintain Quality of Life
Consider the long-term effects

- In terms of the urinary tract
- The quality of life issues
- The appropriateness of treatment
- The durability of treatment

Life expectancy

- Normality should be the aim
- Differences between the paraplegics & quadriplegics
- Neurological diseases like MS are different than SCI

The Guidelines

Catheters

- Indwelling urethral catheters are not recommended in neurogenic patients
- Increases the risks of:
  - UTI
  - renal impairment
  - bladder stone formation
  - urethral stricture
  - urethral erosion
  - bladder cancer


Screening cystoscopy in chronically catheterized spinal cord injury...
Complications of urethral catheters

- SPC is easier to manage in terms of hygiene and catheter changes
- 90% of patients prefer SPC over urethral catheters
- SPC remains a valuable option in quadriplegic patients
- SPC care is important to reduce morbidity in patients with NBD

The surgical risk of suprapubic catheter insertion and long-term sequelae.


Is suprapubic cystostomy an optimal urinary management in high quadriplegics?. A comparative study of suprapubic cystostomy and clean intermittent catheterization.


Complications of suprapubic catheters

- Gold standard
  - Sterile vs clean
- Effective in patients with:
  - Detrusor underactivity or acontractility
  - Detrusor overactivity (provided it can be controlled)
- The prevalence of complications can be limited by:
  - Adequate patient education
  - Use of non-traumatizing techniques
  - Adequate precautions to prevent infections

Clean self intermittent catheterization

- IC aims to resume normal bladder storage and regularly complete urine evacuation
- They avoid some of the complications of IDC
- IC can improve incontinence, or make patients with neurogenic bladder continent, if; bladder capacity is sufficient
- Bladder pressure is kept low, urethral resistance is adequate, and fluid intake is balanced with frequency of catheterization
- A post-void residual greater than 150 ml is an independent risk factor for development of UTI in stroke patients

Clean self intermittent catheterization

- Most appropriate technique and catheter depend on individual anatomic, social and economic possibilities
- Two main techniques have been adopted, aseptic IC & clean IC
- The aseptic non-touch technique involves the use of sterile materials each time and insertion of the catheter “out of the sheath” without touching it directly - “nontouch technique”
- Clean technique is washing hands but catheterization can be without a “nontouch technique”
Clean self intermittent catheterisation

- Mainstay of treatment in paraplegics – often in conjunction
- Bladder compliance is better maintained in pts undertaking CISC
- FU at 18 years - significantly lower complication rate with
  - CISC (27.2%)
  - spontaneous voiding (32.4%)
  - suprapubic catheterisation (44.4%)
  - chronic urethral catheterisation (53.5%)

Comparison of bladder management complication outcomes in female spinal cord injury patients.
Bennett CJ, Young MN, Adkins RH, Diaz F. J Urol. 1995 May; 153(5):1458-60

- Females
  - CISC a significantly lower complication rate (17%)
  - compared with pads (40%)
  - indwelling catheter (greater than 200%) groups.

Comparison of Complications between catheters

Hydrophilic or not?!

- SpeediCath hydrophilic- coated catheters v polyvinyl catheters
- SCI patients
- 1-year, prospective, open, parallel, comparative, randomised, multi centre
- Primary endpoints were occurrence of symptomatic UTI & hematuria
- Secondary endpoints were development of urethral strictures and convenience of use
- The results indicate a beneficial effect regarding UTI when using hydrophilic-coated catheters

Catheter controversies

- one catheter design, material
- sterile technique versus clean
- single-use or multiple-use catheters

META ANALYSIS of RCT

- There was a significantly lower incidence of reported UTIs in the hydrophilic-treated group compared with the non-hydrophilic.
- Hematuria was also reported significantly less in the hydrophilic group
- Meta-analysis supports the benefit of hydrophilic over non-hydrophilic
- Most of the evidence came from men
- It must be noted that much of the literature comparing IC brands is industry sponsored and must be interpreted cautiously
- A realistic approach in clinical practice would be to allow patients to try several brands and types to choose the preferred for their own needs
Reuseable or not?!

- Silicone catheter reused over years for clean IC was safe for men with SCI were investigated
- Reused silicone catheter appeared to function as well as disposable
- To reuse urinary catheters one should consider the increased risk of infection
- SCI patients in developing countries can do CIC with a reusable silicone catheter in a safe manner if one cleans and applies it

Complications affecting the Urethra

- False passage
- Urethral stricture
- Catheterisation difficulties
- Undermining of the bladder neck
- Urethral cleavage (male and female)

False Passages

- Caused by traumatic catheterisation
- Can cause the catheter to go into the false passage and even more trauma
- For the acute try a period of indwelling catheterisation
- Is it treatable - inject bulking?

Conclusions

- Combination of antimuscarinics and CSIC is the mainstay of management of NBD
- This maintains a low pressure bladder and facilitates complete bladder emptying.
- CSIC should be started during the spinal shock phase once stable
- Four to six catheterizations per day are usually recommended
- The maximal volume drained is between 300 and 500 ml
- The recommended type of catheter is hydrophilic coated catheters because they are associated with less urinary tract infections, urethral injuries and hematuria episodes
- The suggested urine output per day is between 1.5 to 2 litres
- A new catheter is to be used each time
- The patient washes the hands only with soap before performing CSIC
- Several factors can impede a patient’s ability to perform CSIC including
  - impaired manual dexterity
  - quadriplegia
  - poor bladder emptying
  - edema
  - infection
- In quadriplegia, a tendon transfer surgery could be needed before patients start CSIC.

ICI Recommendations

- IC is the first choice treatment for those with inability to empty the bladder adequately and safely in neurogenic voiding dysfunction is a valuable tool for achieving continence. (A)
- Proper education and teaching are necessary to achieve a good outcome. (B)
- To prevent and reduce complications, a nontraumatizing technique (external lubricant or lubricant coated catheters) with adequate frequency of catheterization and complete emptying should be achieved. (B)
- Annual follow-up is needed. (B/C)
- Due to the poor quality of studies it is currently not possible to state whether any IC method or catheter type is advantageous (Grade D) and further research on the topic is strongly recommended.
Challenges in performing ISC in patients with Neurological Disease and the role of appliances

Collette Haslam
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National Hospital for Neurology and Neurosurgery
UCLH

Clean Intermittent Catheterisation (CISC)

The use of a clean technique to drain the bladder with the subsequent removal of the catheter which the patient performs himself/herself (ICS)

Gold standard for the management of urinary retention

Patient performance of CISC is a crucial component of the management of incomplete bladder emptying

Neurological conditions affected
- Spinal cord Injury
- Multiple Sclerosis
- Multiple System Atrophy
- Parkinson’s Disease

Benefits of CISC

*Improved Quality of Life with better symptom management*
- Reduction in frequency, urgency and incontinence
- May reduce incidence of UTI
- Reduce daytime fatigue
- Increased confidence
- Safe-guarding renal function
### Challenges to CISC

**Internal factors (patient related)**

- Positioning
- Dexterity
- Cognition
- Mobility
- Anatomical

**Physical disabilities**

- Positioning
- Dexterity
- Cognition
- Mobility
- Anatomical

**Psychological factors**

- Misconceptions and anxiety
- Embarrassment and poor confidence
- Stigma
- Fears
External Factors

- Availability of appropriate catheters and appliances
- Quality of teaching and the training environment
- Access to public toilets
- Inadequate facilities in public toilets
- Community follow-up, access for help and advice
- Availability of experienced nurse specialist

Conclusion

A dedicated professional service which provides high quality teaching, continual advice, reassurance and support will improve the challenges in neurological patients learning and continuing with CISC, while maintaining patient’s quality of life.
What is the patient’s perspective on ISC?

Doreen McClurg, ICS Neurourology Committee

Advantages of Intermittent Catheterization over Indwelling Urinary Catheter

➢ Improved self-care and independence
➢ Reduced risk of common indwelling catheter-associated complications
➢ Reduced need for equipment (such as drainage bags)
➢ Less barriers to intimacy and sexual activities
➢ Potential for reduced lower urinary tract symptoms (frequency, urgency, incontinence) between catheterizations

ISC – The evidence

➢ de Ridder et al (1997) stated that ‘few data exist on the efficacy of intermittent catheterisation in MS’,
➢ Pohl et al (2002) An early dropout rate of about 20% has been described in children and adolescents
➢ McConville (2002) Results of a questionnaire 20% did not receive enough training (n=46)
➢ Woodward et al (2003) Non-compliance is the main reason for patients’ inability to perform ISC and very few studies address the patients’ problems and challenges in everyday life. Only 20% of those persons initially on ISC remained on the same form of bladder management over time.
➢ Pilloni et al (2005) Patients over 70 could perform ISC with 18/23 improved QoL

ISC – The evidence

➢ Oh et al; Akkok et al; Kreuter et al (2005) – spinal cord injuries. Poorer QoL than controls, but compared to non SCI
➢ Spektor et al (2005) psychosocial well-being
➢ Theo van Achterberg (2007) in 2 studies (n=10/20), determinants of short and long term adherence
➢ Utter et al (2008) 23 patients with MS, 20 learned ISC, at 3 months 6/20 had ceased. Those with poorer cognitive function could learn but needed more support
➢ Leadon & Shaw (2009) Adequate instruction and information empowered patients to take control and master the treatment (n=15)
➢ Shaw & Leadon (2009) Positive impacts related to improved QoL, negative impacts on physical difficulties, worry & stigma

ISC – The evidence

➢ McClurg et al (2008) Evidence to suggest that ISC is discontinued within one year of diagnosis, patients, 25% of males and 40% of females had discontinued
➢ Gildner et al (2006) Results of a questionnaire, 60% improved QoL, but those with neurogenic voiding dysfunction may be more bothered by performing ISC than non-neurogenic patients
➢ Jenkins et al (2009) Cochrane review, highlighted the lack of research in the area of catheter policies for people with neurogenic bladder
➢ Jacquet et al (2009) Results suggested that the need to perform ISC for the rest of one’s life resulted in a traumatic crisis
➢ Moore et al (2009) Cochrane review based on current evidence it is not possible to state that any catheter type, technique or strategy is better than another

Funding for speaker to attend:

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- Sponsored by:
ISC - The evidence

- Cameron et al (2010) Only 20% of those persons initially on ISC remained on the same form of bladder management over time. More support needed (n=24,726 from 1973-2005)
- Logan & Shaw (2011) Spinal cord injured patients need more support in the community to continue to use ISC (n=15)
- Wilde et al (2011) Identified 6 major themes in self-management issues in people using ISC long term

A prospective exploration of the experiences of continence services in people with multiple sclerosis with a primary focus on the factors affecting the continuity of use of intermittent self-catheterisation

AIMS

To understand the factors that influence the use and discontinuation of ISC

- Prospectively explored (for one year) the experiences of people with MS who are referred to continence services, especially those who undertake Intermittent self-catheterisation (ISC)
- Undertook qualitative interviews with a sub-section which included those that continued, discontinued and did not start
- Undertake a survey using the MS registry

Data collection:

Bladder diary
Clinical assessment and treatment log
ICIQ-Fluts
ICIQ LUTS + demographics
Eq 5D
Qualitative Interview

Continence Advisers
Researcher at Glasgow
Chief Investigator (DM)

Figure 2 COSMOS Flow Chart – Prospective Longitudinal Cohort

Patients responded to invitation (n=260)
Ineligible (n=13)
Unable to consent (n=10)
Indwelling Catheter (n=10)
Declined 9 (n=3)
Eligible and consented patients (n=224)
Non-responders (N=20)
Too ill (n=4)
Withdrawn (n=12) Uncontactable (n=4)
Baseline questionnaires
Sent (n=224) Returned (204)
Non-responders (n=25)
Withdrawn (n=1)
Too ill (n=5)
Uncontactable (n=19)

4 month questionnaires
Sent (n=211) None to W/D Returned (n=186)
CIC users (n=56)
CIC Non users (n=131)
Non-responders (n=41)
Too ill
Uncontactable

12 month questionnaire (n=204)
204 sent
188 returned
56 used ISC, 13 stopped
13 resistors
119 non-users

Qualitative Interviews

- N=20
- Within 2 months of referral and at 12 months
- 39 interviews
- 6 had discontinued

Survey

Of the 11,000 registrants, 2227 (20%) responded to the survey; from the responders 454(20%) had used CIC, of whom 167 (36%) had then discontinued
Data analysis:

Quantitative:
- Statistical and modelling analysis of demographic data, bladder diary, clinical assessment forms and CoL questionnaires.

Qualitative:
- Interview transcripts will be analysed in a systematic process using a Framework approach.

Triangulation
- Similarities – longitudinal, qualitative and surveys

Date analysis - 10 primary variables
- Age
- Gender
- Teaching methods
- Teaching Intensity
- Social support
- Bladder Symptoms
- MS Symptoms
- Type of MS
- Time since diagnosis
- UTIs

Statistical analysis plan

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Chi square test: p=0.05
Mann Whitney: p=0.05

Statistical analysis plan

1. Data cleaning and preparation
2. Descriptive statistics
3. Inferential statistics
4. Interpretation of results

Qualitative analysis

- Interviews
- Focus groups
- Observations

Results

- Significant differences in
- Changes observed
- Recommendations for practice
It was evident that the individual had to be “ready” to try CIC with some feeling “overwhelmed” initially with the need to use CIC. However, once started and after some time of learning and adjustment patients tended to feel much more positive about doing CIC. This tendency was further strengthened if patients experienced clear benefits of doing CIC.

“[At first], I found that [i.e. doing CIC] kind of tricky and I couldn’t face my bladder but the nurse was brilliant [... so I’m completely loving the catheters now, I use catheters morning and night [... ] and it’s brilliant.” (Patient 79)

There was evidence that ideas about CIC evolved over time and these changes were dependent on their beliefs around and experience of CIC and their symptom change. Many who use CIC did not necessarily like it or enjoy it but they reported that it was an option that improved their bladder management:

“There was evidence that ideas about CIC evolved over time and these changes were dependent on their beliefs around and experience of CIC and their symptom change. Many who use CIC did not necessarily like it or enjoy it but they reported that it was an option that improved their bladder management:

“Yeah, I can remember, yeah, and I was dead against it..... Now it’s a lot better now, it’s really fine now. Yeah, a lot better now, a big improvement” (Patient 27)

Conclusion —

Intermittent self-catheterisation is a complex issue which needs to be introduced sensitively to MS patients.

Although the analysis of the data indicates that it leads many patients to “having a sense of control” and “sleeping all night” it was evident that the individual had to be “ready” to prevent feeling “overwhelmed” initially with the need to use intermittent self-catheterisation (ISC).

For those who discontinued ISC the main reason was having recurrent urinary infections which left them “feeling dirty” and at times suffering from an exacerbation of their MS symptoms which impacted greatly on their quality of life and overall sense of wellbeing.

Participants’ perceptions of ISC can vary and change as they progress through their MS trajectory as they become expert in their condition but support of clinicians and family is crucial.

Unplanned outcomes

➢ Smaller than anticipated number of patients with MS referred to the continence service who went on to be recommended to undertake ISC - 69/204 (34%)

➢ The number of participants who did not attempt ISC although recommended to do so - 13/69 (19%)
Other Literature


Survey of 44 patients performing CISC for a variety of reasons

Internal factors (patient related) • Physical disabilities • Positioning • Dexterity • Visual impairment • Anatomical • Cognition • Psychological factors • Misconceptions and anxiety • Embarrassment and poor confidence • Stigma • Fears

External factors • Access to public toilets • Inadequate facilities in public toilets • Availability of appropriate catheters and assistance appliances • Quality of teaching and the training environment • Community follow-up access to help or advice • Availability of experienced nurse specialist

Antibiotic use ANTIC STUDY


203 participants received prophylaxis and 204 no prophylaxis

The incidence of symptomatic antibiotic-treated UTIs over 12 months was 1.3 cases per person-year (95% CI 1.1–1.6) in the prophylaxis group and 2.6 (2.3–2.9) in the control group, giving an incidence rate ratio of 0.52 (0.44–0.61; p = 0.001), indicating a 48% reduction in UTI frequency after treatment with prophylaxis.

However, resistance against the antibiotics used for UTI treatment was more frequent in urinary isolates from the prophylaxis group than in those from the control group at 9–12 months of trial participation (nitrofurantoin 12% [95% CI 7.0%–20.3%] of 51 participants from the prophylaxis group vs 6% [95% CI 0.0%–15.8%] of 54 participants from the control group with at least one isolate; p = 0.038), trimethoprim (34% [95% CI 23.6%–46.1%] of 51 vs 21% [95% CI 0.0%–38.6%] of 64; p = 0.0003), and co-trimoxazole (26% [95% CI 15.5%–40.6%] of 49 vs 15% [95% CI 0.0%–30.8%] of 62; p = 0.002).

Interpretation Continuous antibiotic prophylaxis is effective in reducing UTI frequency in CISC users with recurrent UTIs, and it is well tolerated in these individuals. However, increased resistance of urinary bacteria is a concern that requires surveillance if prophylaxis is offered.


26 semi-structured qualitative interviews

Three overarching topics were revealed with corresponding themes:

➢ the experiences of intermittent self-catheterisation and urinary tract infections (normalisation, perceived burden);

➢ attitudes towards antibiotics for urinary tract infection treatment (nonchalant attitudes, ambivalence towards antibiotic resistance);

➢ experiences of low-dose prophylaxis antibiotics (habitual behaviour and supportive accountability).

Conclusion: The emotional and practical burden of catheter use and urinary tract infection was considerable. Beliefs pertaining to antibiotic use were based on utility, gravity of need and perceived efficacy. These opinions were often influenced by clinician recommendations.
Complications of IC in Neurological Patients: UTI and Urethral Trauma

Dr Pawan Vasudeva

M.S., M.R.C.S.(Ed), MCh (Urology)
Professor
Department of Urology and Renal Transplant
VM Medical College and Safdarjang Hospital
Delhi, India

Magitude of the Problem

• Estimated that 62-74 people/100,000 are on IC
• Prevalence of repeated symptomatic UTIs among IC users: 20-25%
• Significant morbidity; Decreased HRQOL
• Lead cause for septicemia in patients with SCI / Increased mortality
• Increasing Antibiotic resistance has complicated matters

Ref: Fisher 2018
Defining Urinary Tract Infection

Bacteriuria with Pyuria AND One of more Systemic Signs/Symptoms

Bacteriuria: (Quantitative Urine Culture Criteria)
- Condom collection device ≥ 10^4 cfu/ml
- On Intermittent catheterization ≥ 10^2 cfu/ml
- Indwelling cath/Suprapubic aspirate Any detectable conc

Signs/Symptoms
- Cloudy urine with increased odor
- Loin/Suprapubic pain, Pain during micturition, Onset of UI
- Fever, Malaise,Lethargy,Sense of unease
- Increased Spasticity, Autonomic hyperreflexia

Ref: NIDRR Consensus statement 1992

Risk Factors

Ref: Vasudeva and Madersbacher 2014

General Preventive Measures

- Patient education: Utmost Importance
  Physician/Nurse must be sufficiently trained

Key Points:
- Size: 12-16 catheter
- Adequate Lubrication /Gentle Handling /Atraumatic Catheterization
- Hand Cleaning / Meatus cleaning /Catheter cleaning
- Self IC over caregiver IC.

Ref: Wyndaele 2005

Aseptic technique Vs Clean Technique

<table>
<thead>
<tr>
<th></th>
<th>Aseptic</th>
<th>Clean</th>
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</thead>
<tbody>
<tr>
<td>Gloves</td>
<td>Sterile</td>
<td>Clean / Clean hands</td>
</tr>
<tr>
<td>Catheter</td>
<td>Single use sterile</td>
<td>Single use sterile / Multiple use clean catheter</td>
</tr>
<tr>
<td>Drainage tray</td>
<td>Sterile</td>
<td>Clean</td>
</tr>
</tbody>
</table>

Asymptomatic Bacteriuria : No Difference
Incidence of Symptomatic UTI : No Difference
Number of weeks to Onset of UTI : No Difference


Single Use (Sterile) Vs Multiple Use (Clean)

Asymptomatic Bacteriuria : No Difference
Incidence of Symptomatic UTI : No Difference
Number of weeks to Onset of UTI : No Difference


Consensus on How long can a catheter be reused : No
Consensus on cleaning technique : No
Hydrophilic Vs Uncoated

<table>
<thead>
<tr>
<th>Author/ Year</th>
<th>UTI</th>
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<tbody>
<tr>
<td>Bermingham et al 2013</td>
<td>No Difference</td>
</tr>
<tr>
<td>Li Li et al 2013</td>
<td>Significantly reduced (Odds of UTI decrease by 64%)</td>
</tr>
<tr>
<td>Preito J et al 2014 (Cochrane)</td>
<td>No Difference</td>
</tr>
<tr>
<td>Clark et al 2016</td>
<td>Significantly reduced</td>
</tr>
<tr>
<td>Rognoni et al 2017</td>
<td>Significantly reduced (ERR 16%)</td>
</tr>
</tbody>
</table>

Treatment

Asymptomatic bacteriuria:
- Do not treat (Unable to eradicate/ Early return/ Resistant M.O)
- Exceptions:
  - Urological procedure
  - Prosthesis implantation
  - Pregnant
  - Immunosuppressed patients

Suspecting UTI:
- Urine Sample / Consider Blood Culture / Consider USG KUB

Ref: Biardeau 2008

Documented UTI: Duration of therapy??

- No data on optimum duration
- Based on localization/clinical response/co-morbidities

- UTI without fever: 7-10 days antibiotic course
- UTI with fever: 14 day antibiotic course
- UTI + parenchymal involvement: Extend duration

Choice of antibiotic:
- Monotherapy usually sufficient
- Mild symptoms: Nitrofurantoin, if sensitive
- Severe UTI: Fluoroquinolone
- MRSA (outpatient): Trimethoprim-Sulfamethoxazole
- MRSA (Hospitalized): Vancomycin

Ref: Everaert K 2009, Pannek 2017

Antibiotic Prophylaxis:
- Avoid the use of long-term antibiotics for recurrent UTI’s
  Ref: Niels-Weise BS 2012, EAU 2018
- RCT involving 51 NHS organizations (UK); 361 patients analysed
- Low dose AB prophylaxis vs No prophylaxis over 12 months
- 48% reduction in UTI frequency; Antibiotic resistance also more
- Role for individualized management:
  - Individual patient distress from repeated UTI
  - Local threat of antimicrobial resistance

Ref: Fisher 2018 Lancet

Prevention of Recurrent UTI’s

What is “Recurrent” UTI
Arbitrarily defined by the occurrence of 3 episodes/year or 2 episodes/6 months or 1 episode in last 3 months.

1st Step: Go back to the basics
- Re-evaluate and optimize bladder management
- Catheterization technique/frequency/adequacy
- Bladder filling dynamics (Compliance/VUR)
- Upper tracts (Hydronephrosis/comlications like stones)

Antibiotic Prophylaxis:
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  Ref: Niels-Weise BS 2012, EAU 2018
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  - Individual patient distress from repeated UTI
  - Local threat of Antimicrobial resistance

Ref: Fisher 2018 Lancet

WOCA Therapy
- D Mannose (1.5 grams BD)
  Initial Results promising
- Intravesical Bacterial Interference(Ecoli)
  Under Evaluation for NB
- Oral Probiotic Therapy (Lactobacillus)
  Under Evaluation for NB
- Methenamine hippurate:
  No Role
- Cranberry:
  No Role

Alternative Medicine:
Prospective Study in patients with SCI and recurrent UTI
10 controls / 25 subjects who received adjunctive homeopathic drug
Significant decrease in self reported UTI's at 1 year
High satisfaction with homeopathic care
Ref: Pannek 2018

Genital Infections
- Epididymitis / EO (2-28%)
- Can lower the fertility (Azoospermia from 7% to 50% in a study)
- IC is an independent risk factor for development of EO
- Urethral Stricture may predispose to EO

Genital Infections
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Urethral Trauma in NB patients on IC
- Catheter introduction: Urethral irritation / Urethral trauma
- Urethral Bleeding: 1/3rd of patients on long term IC (mostly males)
- False Passages
- Urethral Strictures: Located distally/Proximally (<10% -25%)
  (The numbers requiring intervention are much lower)
  (3% in a 4 yr follow up study -33% in a 14 year follow up study)
Ref: Guenther M 2001, Krebs J 2015

Risk Factors for Stricture
- Duration of IC (most occur after 5 years)
- High catheterization frequency
- Forceful manipulation
- Frequent urethral bleeding
- Prior Indwelling catheterization

Prevention
- Patient education: Utmost Importance
  Physician/Nurse must be sufficiently trained
  Key Points:
  Size: 12-16 catheter
  Adequate Lubrication/Gentle Handling/Atraumatic Catheterization
  Increased Striated Sphincter tone: Wait at Sphincter for 1-2 min
Ref: Di Benedetto P 2011
Are Hydrophilic Catheters Less “Irritating” and Less traumatic ?

- Polyvinylpyrrolidone binds water molecules to the catheter surface
- Friction reduces by 90-95%
- Hypothesis: Lesser Microtrauma/Bleeding/Inflammatory response

Ref: Vaidyanathan S 1994

Hydrophilic Vs Non Hydrophilic

<table>
<thead>
<tr>
<th>Study (RCT)</th>
<th>Microscopic Hematuria</th>
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<tbody>
<tr>
<td>Vapnek et al 2003</td>
<td>Significant decrease</td>
</tr>
<tr>
<td>De Ridder et al 2005</td>
<td>No Difference</td>
</tr>
<tr>
<td>Cardenas et al 2011</td>
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</tr>
<tr>
<td>Li Li 2013(MA)</td>
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<tr>
<th>Study(RCT)</th>
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<tr>
<td>De Ridder et al 2005</td>
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</tr>
<tr>
<td>Defoor et al 2017</td>
<td>No difference</td>
</tr>
</tbody>
</table>

Treatment

- Suspect if difficulty in catheterization/Recurrent UTI (E-O)
- RGU/MCU or a urethroscopy to confirm
- False passage: IDC 3-6 wks + 5 day antibiotic course
- Stricture: (Least to most invasive)

Ref: Michielsen DP 1999, Biardeau 2016

Summary

- IC for NB, considered standard of care, has its own complications
- Diagnosis of UTI in NB patient on IC is a challenge
- Do not screen for UTI/treat ABU in NB patient on IC
- UTI in NB patients on IC is always complicated
- No established therapy exists for recurrent UTI prevention
- Forceful manipulation should be an absolute “NO” for patients on IC
- No technique/method/catheter type has shown conclusive superiority for preventing IC complications in NB patients
- Patient education, motivation, compliance and optimized bladder management are key for preventing complications of IC

Thank You
If all the conditions required to perform IC are not present, a second option must be chosen...

Variables:
- Underlying disease, it's natural evolution, neurological deficits (mental status) and degree of disability
- Patient and family’s wishes (comfort, convenience, sexuality)
- LUT dysfunction: Urodynamic testing: bladder, internal and external sphincter.
- Unusual conditions
- Available resources

If the conditions required to perform IC are not present, a second option must be chosen...

Other voiding patterns:
A) Behavioral therapy: Triggered reflex voiding, Bladder expression (Crede and Valsalva Maneuver)
B) Indwelling catheterisation: Transurethrally (UD) / Suprapubically (SPC)
C) Condom catheter (CC)

Behavioral therapy: "Triggered reflex voiding"
- Bladder expression (Crede and Valsalva Maneuver)

Unodinamically safe and stable (Videosounddincmic study if available) + EMG
No Guidelines on suitable intervals for bladder emptying: Voiding Diary, PVRV and UD parameters

Contraindications:
- Reflux into ureters, seminal vesicles or prostate
- Hemma, pelvic organ prolapse, hemorroids
- Autonomic dysreflexia
- Adrenergic blockers
- Immunoparesis (diabetes)
- Unbalanced voiding (high PVRV)

Complications: bladder and renal function deterioration (High pressures)

Triggered reflex voiding

Based on a non-physiological sacral reflex. Compromise C-fibers. Limited role in ANLUTD.
Not recommended: risk of bladder high pressures (Drake et al, 2016)

Various manoeuvres possible: by patient or carer: suprapubic tapping, high scratching, ano-rectal manipulation
Detrusor-sphincter dyssynergia or detrusor-bladder neck dyssynergia present in over 30% of suprasacral lesions (SCI)

Contraindications: 1 main:
- No adequate detrusor contraction: too low, too high, too short or too long.

Consider in: other surgical or chemical (BTH) sphincterotomy, bladder neck incision, alpha-blockers

Limitations: Urinary incontinence between triggering episodes (antimuscarinics = external appliances), 80% asymptomatic bacteruria

BLADDER EXPRESSION: CREDE (Manual compression of the lower abdomen)
VALSALVA (Abdominal straining)

Has been recommended for a long period of time in the past
Many authors just don’t recommend it: high pressure:

- Indication (7): underactive detrusor = underactive or incompetent sphincter mechanism
- Unodinamically safe: usually high pressure, high PVRV, poor urinary flow. Flaccid Paraplegic patients: include a mechanical obstruction at the level of the external sphincter, can use alpha-blockers, surgical or chemical (BTH) sphincterotomy: rare of urinary stress incontinence.

Contraindications: detrusor-sphincter dyssynergia or sphincter hypertrophy or if it creates high intra-abdominal pressure

Complications: may increase urinary and fecal incontinence, RVU, prostatitis, epididymo-orchitis, genital-rectal prolapse, and hemorroids
B) Indwelling urethral catheters – transurethrally (ID)

Should be avoided: risk factors for UTI and long-term complications. (Stohrer et al, 2009)

Indications: difficulty or impossibility in performing IC, persistent leakage between IC

Silicone catheters have advantage over latex catheters. (Taip M et al,1990)

Complications: Many and well known, Higher than IC: encrustation, predictive of bladder and renal stones. Urethral trauma: traumatic idiogenic hypospasia in men (Urinary incontinence) false passages, strictures, diverticula, UTIs, Cystitis, epididymo-orchitis, prostatitis, bacteriuria, bleeding, fistula (improper size and technique), bladder neck incompetence, meatus and urethral sphincter erosion, aquamous cell bladder carcinoma.

Regularly changed: (not well studied) prevent obstruction – (SPC) Stones – Urosepsis (Relationship between urethral trauma and urosepsis) Chronic patient with little complications: 4-6 weeks

When bladder high pressures: Consider: (antimuscarinic + ID) or (BTX A + ID)

B) Indwelling urethral catheters – transurethrally (ID)

Inform the presence of ID to the rest of the team (and how to deal with it):

occupational therapists, physiotherapists, nurses

ID removed ASAP - In acute and subacute phase. More time with ID, more complications and more difficult to achieve rehabilitation objectives in LUT

If it cannot be removed: fixation to the abdomen in males

(transcatheter washout of the penile-scrotal angle)

B) Indwelling urethral catheters – transurethrally (ID)

Recommend conversion to SPC after more than 2 weeks of ID: 100%. NEVER TREAT. Only symptomatic UTIs.

Asymptomatic bacteriuria: after 5-7 weeks of IC: 100%. NEVER TREAT. Only symptomatic UTIs.

Indications: failure of IC, severe urethral damage, worsening of the original disease.

When long-term catheterisation is needed:

SPC preferred to Transurethral catheter (ID) - CONVERT ASAP

Advantage: no trauma, no pain. Less infections (prostaglandins and prostatis).

Enhanced independence, a perceived benefit to body image, and provision of dry and catheter-free genitalia (Improve sexuality)

B) Indwelling urethral catheters – suprapublically (SPC)

Risks: requires a minor surgery:

potenial bowel, prostatic, vaginal or paravesical blood vessels (bleeding) injuries.

Insertion technique: No evidence which one is best. Open suprapubic cystostomy under general or spinal anesthesia: Gold standard. Others:Suprapubic trocar (16 Fr)

Complications: Renal and bladder stones, UTIs, catheter blockage, persistent urethral leakage, New-onset reflux, Carcinoma (8% risk after 20 years of catheterization) Locke et al, 1986)

Many authors don’t recommended (Stohrer et al, 2009)

But recent Investigations: (Feifer et al, 2008)

Anti-cholinergics + frequent catheter changes + bladder washing + volume intake:

Similar morbidity to IC

B) Indwelling urethral catheters – suprapublically (SPC)

FOLLOW UP AND LONG-TERM ACCEPTANCE

Follow up: what to check: clinical outcome (complications), acceptance

(Urologically safe, renal function control, PVR, ultrasound)

Original Article

Bladder management and urological complications in patients with chronic spinal cord injuries in Taiwan

Sheng-Ru Chen, Yue-Huei Chang, Fu-Hung Chang, Cheng-Lin Lee, Hui-Chung Jau

Department of surgery, National Taiwan University College of Medicine, Taipei, Taiwan. E-mail: stchens@ntu.edu.tw.

Patients with a duration of SCI + 5 years chose indwelling catheters or a cystostomy more often than CIC.

In INAREPS (Argentina):

Long-term acceptance depends mainly on how fast it is proposed to perform IC to the patient after the injury. (First months vs several years)
**TAKE HOME MESSAGES**

IC indication must never be forced

**General recommendation vs special case**: Decision depends on the experience of the team

**Objective**: Best Match (Bladder Voiding options and your patient)

Your action save lives and improve quality of life in Neurourology:

Tips and tricks: check if the action is done correctly (even if you do not perform it)

**Multidisciplinary work**:
Complications always coming, try to reduce them and recognize them ASAP

Always have a Urologist near... (better with experience in Neurourology)

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**Thanks Danke Merci धन्य वाद Thanks Danke Merci धन्य वाद**

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Case Study 1

Male patient with Multiple Sclerosis
Initial Expanded Disability Status Scale (EDSS) 3
Frequency, Urgency, PVR 150mls
Anticholinergic
Will not self catheterise

Three years later – PVR 300mls, UTIs, Incontinent
EDSS 6.5
ISC – managing well - symptomatically improved

Case Study 2

62 year old Female – right handed
Stroke - left hemisphere
Dysphagia
Right side weakness
Indwelling catheter inserted in Accident and Emergency

2 TWCs on ward – catheter reinserted due to incontinence – free drainage
4 weeks later referred to inhouse continence service

CARE PLAN