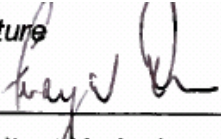




GUIDELINES ON THE CARE OF URINARY CATHETERS (URETHRAL & SUPRA-PUBIC)	
<b>Version Number</b>	1
<b>Date of Issue</b>	27 <sup>th</sup> February 2013
<b>Reference Number</b>	UCCG-02-2013-CHFQ-V1
<b>Review Interval</b>	3 yearly
<b>Approved By</b> Name: Mr. Feargal Quinn Title: Consultant Urologist	Signature  Date <u>24/2/13</u> _____ Consultant Urologist
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<b>Location of Copies</b>	On Hospital Intranet and locally in department


Document Review History		
Review Date	Reviewed By	Signature
February 2016		

Document Change History	
Change to Document	Reason for Change

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## GUIDELINES ON THE CARE OF URINARY CATHETERS (URETHRAL & SUPRA-PUBIC)

### 1.0 Introduction

Urinary catheters are a common and vital intervention in the acute clinical setting. However, catheter associated urinary tract infection is one of the most common healthcare associated infections (SARI 2011). Healthcare professionals can play a key role in reducing and preventing the risk of catheter related infections.

### 2.0 Definition of Guidelines

Urinary catheterisation is defined as an intervention to enable emptying of the bladder by insertion of a catheter. Catheterisation may be indwelling or intermittent. Indwelling urinary catheterisation is categorised as either short-term (*in situ* less than 28 days) or long-term (*in situ* greater than 28 days).

These Urinary Catheter Guidelines represent the written instructions about how to ensure high quality care is provided. Guidelines must be accurate, up to date, evidence-based, easy to understand, non-ambiguous and emphasise safety. When followed they should lead to the required standards of performance.

### 3.0 Applicable to

These guidelines are applicable to healthcare professionals involved in the insertion, care and removal of intermittent or indwelling urinary catheters.

### 4.0 Objectives of the Guidelines

The purpose of the Urinary Catheter Guidelines is to promote safe, effective and consistent practice in relation to Urinary Catheters.

### 5.0 Definitions / Terms

**Urinary catheterisation:** an intervention to enable emptying of the bladder by insertion of a catheter.

**Short-term indwelling urinary catheter:** catheter is *in situ* less than 28 days

**Long-term indwelling urinary catheter:** catheter is *in situ* greater than 28 days.


**Urinary catheter:** a soft hollow tube which is inserted into the bladder for the purpose of draining urine or instilling fluid. The catheter may be introduced via the urethral or suprapubic route (via abdominal wall), or via a surgically constructed channel (Mitrofanoff).

**Supra-pubic catheter:** a urinary catheter inserted, through an artificial tract in the abdominal wall, just above the pubic bone and into the dome of the bladder.

**Urinary tract infection (UTI):** an infection involving any part of the urinary system, including urethra, bladder, ureters, and kidney.

**Catheter associated urinary tract infection (CAUTI):** UTI associated with a urinary catheter

**Clean intermittent catheterisation (CIC):** insertion and removal of a catheter several times a day to promote urinary continence

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## 6.0 Guidelines on the care of urinary catheters

### **6.1 Indications for Catheterisation:**

Monitor urinary output  
 Manage urinary retention  
 Post urological, pelvic or abdominal surgery  
 Diagnostic purposes, e.g. urodynamics or x-ray intervention  
 During epidural analgesia  
 To promote healing of a sacral or perineal wound, where appropriate  
 Facilitating continence / maintaining skin integrity (when all treatment methods have failed)  
 (McQueen et al. 2012, RCN 2012)


### **6.2 Complications of Urinary Catheterisation:**

Infection	Haematuria
Bladder spasm	Erosion of the bladder wall
Trauma	Catheter encrustation
Urethral perforation	Bladder calculi
Urethral stricture	Altered body image
Bypassing, i.e. urine leaking around catheter	Allergy to Latex

### **6.3 Meatal cleansing before catheter insertion**

There is some debate in the literature and in practice about the use of antiseptic solution versus sterile saline for meatal cleansing before insertion of a catheter. While some guidelines recommend that there is no clinical advantage to using antiseptic solutions to prepare the meatus (Pratt et al. 2007, McQueen et al. 2012), the issue remains unresolved (SARI 2011).

In OLCHC, if a child has a urology, nephrology or other condition which increases their risk of CAUTI, antiseptic solution should be used to prepare the meatus before the insertion of a catheter. Similarly, if a child requires catheterisation for Micturating CystoUrethrogram, an antiseptic solution should be used to clean the urethral orifice before catheterising. For other children, sterile saline is sufficient. Discuss with the Urology or Nephrology Team if in doubt.

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## 6.4 Insertion of an Indwelling Urethral Urinary Catheter

Due to the risk of CAUTI, the decision to catheterise should only be taken after there is full consideration of the implications of the procedure, and when there is no alternative (Gould et al. 2009, SARI 2011).

In OLCHC doctors catheterise male patients when indwelling catheters are required. Nurses may insert an indwelling catheter in female patients. The healthcare professional must have acquired the necessary knowledge and skill prior to insertion, caring for, or removing a catheter. Each nurse must assess if the skill is within her/his scope of practice (An Bord Altranais 2000). The insertion of indwelling urinary catheters must be carried out in accordance with the 'Guidelines for Prevention of Abuse of Children in Hospital' (OLCHC 2007).

When reasonable efforts to catheterise fail, the procedure is discontinued. In OLCHC it is recommended that catheterisation should be attempted only once in an occurrence. Because of the risks of urethral oedema, subsequent attempts are likely to prove increasingly painful and may be unsuccessful. In this instance, consult the paediatric urology team.

Standard precautions must be used by all healthcare professionals when caring for a child with a urinary catheter (OLCHC 2011, SARI 2011).

### Equipment

Trolley (*cleaned with soap/water & disinfected with Chlorhexidine Gluconate 0.5% w/v in 70% alcohol v/v*)

Disinfection wipe

Sterile catheterisation pack containing receiver, gauze, fenestrated drape i.e. drape with pre-cut hole

Sterile anaesthetic gel or K-Y Gel

0.9% Saline or antiseptic solution for cleansing meatus (See Section 6.3)

Sterile catheter of appropriate size

Sterile drainage bag and stand


Sterile 5ml syringe

Powder free sterile gloves

10ml vial of sterile water (to inflate balloon)

Adhesive tape or catheter fixation device

Action	Rationale & Reference
Assess the child in relation to need for catheterisation, and the type, length and size of catheter to be used.	Only catheterise when clinically indicated. Using the smallest gauge catheter will help prevent urethral trauma <i>Pratt et al. 2007, Gould et al. 2009, McQueen et al. 2012</i>
Explain the procedure to the child and parents	To help prepare and support them for the procedure <i>Hockenberry and Wilson 2011</i>
All efforts must be made to protect the privacy and dignity of the child during the procedure	To protect the child's best interests <i>OLCHC 2007</i>
Clean meatal area with soap, water and clean cloth. This may be done during a bath.	To prevent contamination of the urethra <i>Pratt et al. 2007, SARI 2011</i>
Position child comfortably. <b>Female:</b> Lying flat with knees flexed <b>Male:</b> Semi-recumbent	To facilitate insertion of the catheter and maintain child's comfort <i>McQueen et al. 2012</i>
Open equipment onto prepared trolley	
From this point use Aseptic Non-Touch Technique (ANTT) Level 2 when performing this procedure	Hand hygiene and ANTT Technique are essential to prevent infection <i>OLCHC 2013, Gould et al. 2009, SARI 2011</i>
Perform antiseptic hand hygiene before applying sterile gloves	

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Attach drainage bag to catheter before insertion

Clean meatal area with sterile saline **OR** antiseptic solution as appropriate

**Female:** Separate labia majora. Clean utethral orifice in downward strokes using gauze and cleansing solution

**Male:** Retract foreskin (if present). Clean the glans

Place fenestrated drape over genital area

Apply single use lubricating gel to the tip of the catheter and the urethral orifice.

If using anaesthetic lubricating gel \*

**Female:** place on gauze square and lay gauze over urethral orifice

**Male:** inject into urethra using nozzle

*\*Follow manufacturer's dosing guidelines*

Gently introduce the catheter into the urethral orifice. When urine flows, advance the catheter until urine flows freely (approx 2.5cms)

Inflate the balloon with the correct amount of sterile water as specified by the manufacturer.

DO NOT over inflate the balloon

Always ensure urine is flowing before inflating the balloon

Secure catheter to the abdomen or groin using adhesive tape or a catheter fixation device

Secure the drainage bag to the child's abdomen using tape and attach to the stand

Praise and thank the child

Discard the equipment in the Healthcare Non-risk waste (Household Waste) unless contaminated with blood.

Record the intervention in child's healthcare record:

- reason for catheterisation,
- time and date catheter was inserted & by whom,
- any difficulties experienced during procedure,
- number of attempts to catheterise
- if urine specimen was obtained,
- size of catheter & balloon inflation volume,
- volume of urine drained
- when to remove catheter

To maintain a closed system *Pratt et al. 2007*

To reduce the risk of introducing infection *SARI 2012, Urology/Nephrology Teams 2013*

To create a sterile field *SARI 2011*

To reduce discomfort, to facilitate the insertion of the catheter and to prevent urethral trauma *McQueen et al. 2012*

Full local anaesthetic effect is achieved within 5-10minutes of application of anaesthetic gel. *Manufacturer's Instructions*

This ensures the catheter is not misplaced in the urethra *NHS QIS 2004*

Fluid may leak via the balloon membrane *NHS QIS 2004*. Over-inflating the balloon may cause trigonal irritation, incomplete drainage of the bladder and rupture of the balloon *Trigg & Mohammed 2011*

To avoid inflating the balloon in the urethra

To minimise trauma to the urethral meatus and bladder neck. Trauma is a particular risk if child mobilises with a catheter which is incorrectly secured *McQueen et al. 2012*


Prevents accidental dislodgement of catheter meatal trauma *Trigg & Mohammed 2011*

To maintain the trusting relationship with the child *Hockenberry and Wilson 2011*

*OLCHC 2010*

To ensure all staff are aware of the catheter care needs of the child *Gould et al. 2009, SARI 2011, McQueen et al. 2012*


To ensure effective communication through accurate recording of care. *An Bord Altranais 2002*

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## 6.5 Care of an Indwelling Urinary Catheter

The principal aim of effective catheter care is to prevent infection and minimise complications (SARI 2011, McQueen et al. 2012). Please refer to Appendix 3: Troubleshooting Guide to manage problems that arise.

Action	Rationale & Reference
All efforts must be made to protect the privacy and dignity of the child who is catheterised	To protect the child's best interests <i>OLCHC 2007</i>
Standard precautions must be applied by all healthcare professionals when caring for a urinary catheter	To prevent infection <i>SARI 2011</i>
Use Aseptic Non-Touch Technique (ANTT) Level 3 when providing catheter care unless "breaking" a connection, e.g. changing drainage bag, when ANTT Level 2 is used.	To prevent infection <i>OLCHC 2013</i>
All healthcare professionals should perform antiseptic hand hygiene before and after any interaction with the catheter or drainage bag.	To prevent infection <i>OLCHC 2010</i>
Maintain a closed urinary drainage system	To reduce risk of infection <i>SARI 2011</i>
Choose a drainage system appropriate to the child's needs: <b>Patient on bed-rest:</b> 24 hour drainage bag <b>Ambulant patient:</b> leg-bag by day. Connect a 24 hour drainage bag to the leg-bag at night <b>Patient requiring close monitoring of output:</b> drainage bag with an hourly urometer	
Position urinary drainage bag below the level of the bladder	To promote drainage and prevent backflow of urine into bladder Pratt et al. 2007
Ensure drainage bag is not touching the floor	To prevent contamination <i>Gould et al. 2009, SARI 2011</i>
Empty the drainage bag using a clean container (separate container for each patient).	To prevent contamination <i>Gould et al. 2009 SARI 2011</i>
Avoid splashing and avoid contact between the drainage tap and the container.	
<b>Cleansing Catheter Site</b>	To prevent contamination of the catheter and prevent infection <i>SARI 2011</i>
<b>Urethral catheter:</b> Wash or shower child daily to maintain meatal hygiene.	Expert opinion and international guidelines indicate that there is no advantage to using antiseptic solutions for meatal cleansing compared with routine bathing / showering / washing <i>Pratt et al. 2007, Gould et al. 2009, SARI 2011.</i>
For the child on bed-rest, clean urethral meatus with soap and water.	
Additional meatal hygiene is needed if child soils.	
When attending to child's hygiene, leave drainage bag attached and dry the bag.	To maintain closed system drainage

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**Supra-pubic Catheter:** ANTT Level 2 should be used when caring for insertion site until it is healed, after which Level 3 ANTT may be used.

To prevent infection *OLCHC 2013, SARI 2011, McQueen et al. 2012*

Cleanse site using sterile saline and apply a sterile dressing if necessary.

Once the supra-pubic insertion site is healed, it may be nursed exposed and washed daily with warm soapy water.

To prevent infection *SARI 2011, McQueen et al. 2012*

### **Changing the Drainage Bags**

**24hour drainage bags:** change weekly

**Leg-bags:** change weekly

**Overnight drainage bags:** change daily

As per manufacturer's instructions

This should be clearly documented in the patient's healthcare record.

**Note:** Change bag if visibly soiled or if bag becomes disconnected

To prevent contamination *Gould et al. 2009, McQueen 2012*

Desired urinary output is

**Infant/child:** 1-2ml/kg/hour

**Adolescent:** 0.5-1ml/kg/hour

These values are generally accepted normal ranges but may vary depending on the child's clinical condition. Assess each child according to his/her intake and insensible fluid losses.

### **Flushing of urinary catheters**


Routine flushing of indwelling urethral catheters is not recommended practice.

Flushing of catheters should only be performed post reconstructive urological surgery **or** on the specific instructions of the surgical team.

Flushing of catheters exposes the child to the introduction of infection to the bladder as well as the discomfort that can be associated with the procedure.

Prevention of catheter blockage by ensuring a good fluid intake and maintaining satisfactory urine drainage is of paramount importance.



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## 6.6 Obtaining a Catheter Sample of Urine

A catheter sample of urine should only be taken when clinically indicated (SARI 2011). A sampling port on the urine drainage bag enables a urine sample to be obtained without opening the drainage system. Maintaining a closed system helps to prevent infection (SARI 2011).


### Equipment:

5ml sterile syringe	Urine specimen jar
Sterile orange needle	Non sterile gloves
Swab impregnated with Chlorhexidine gluconate 2% in 70% isopropyl alcohol	

Action	Rationale & Reference
Explain procedure to child/parent	To help prepare and support them for the procedure <i>Hockenberry and Wilson 2011</i>
All efforts must be made to protect the dignity of the child	To protect the best interests of the child <i>OLCHC 2007</i>
Only obtain sample from specific sampling port on drainage bag. ( <i>See Fig.1 below</i> )	To avoid damage to catheter and to prevent the introduction of infection <i>NHS QIS 2004, SARI 2011</i>
<i>Do not open drainage system to obtain sample.</i>	To maintain closed system. <i>SARI 2011</i>
Use Aseptic Non-Touch Technique Level 3 when performing this procedure	To prevent risk of infection. <i>OLCHC 2013</i>
Perform hand hygiene and apply gloves	To prevent cross infection. <i>OLCHC 2010</i>
Disinfect sampling port with impregnated swab and allow to dry.	To prevent contamination of sample
Using needle and syringe aspirate the required amount of urine from the sampling port.	
Send specimen to laboratory.	As per "Collection of Specimen" guideline to obtain microbiological or biochemical analysis of sample.
Praise and thank the child for their cooperation.	
Record the intervention in the child's healthcare record:	To ensure effective communication through accurate recording of care. <i>An Bord Altranais 2002</i>
<ul style="list-style-type: none"> <li>time and date of sample,</li> <li>any difficulties experienced during procedure.</li> </ul>	



**Fig.1 Example of a urinary drainage bag with a sampling port**

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## 6.7 Removal of an Indwelling Urinary catheter


The longer a catheter remains in situ, the greater the risk of CAUTI. Assess the child daily to ensure the catheter is removed at the earliest opportunity (Gould *et al.* 2009, SARI 2011, RCN 2012).

There is suggestive, but inconclusive evidence that removal of a catheter at midnight, rather than early morning, is of benefit (Joanna Briggs Institute 2006). Slow filling of bladder overnight may allow for easier voiding in the morning, and allows time to deal with problems, such as retention, which may arise during the day. Until stronger evidence becomes available the time of catheter removal should be determined by patient needs and clinical indications.

### Equipment:

Non-sterile gloves	5ml sterile syringe	Container for emptying drainage bag
Water and disposable gauze/cloth	Adhesive removal spray or wipes	


Action	Rationale & Reference
Explain procedure to child/parent	To help prepare and support them for the procedure <i>Hockenberry and Wilson 2011</i>
All efforts must be made to protect the dignity and privacy of the child	To protect the best interests of the child <i>OLCHC 2007</i>
<b>Note:</b> Empty catheter bag before removal.	To measure output. To permit safe immediate disposal of equipment following removal.
Use Aseptic Non-Touch Technique Level 3 when performing this procedure	To prevent infection. <i>OLCHC 2013</i>
Perform hand hygiene and apply gloves	To prevent cross infection. <i>OLCHC 2010</i>
Clean urinary meatus using water and gauze or cloth.	To prevent risk of introducing infection <i>Trigg &amp; Mohammed 2011</i>
Remove adhesive tapes using removal spray / wipes.	To allow easier removal of catheter
Remove water from balloon using syringe (check care-plan to confirm volume). If the balloon does not deflate: Slide the plunger of the syringe up and down the barrel of the syringe several times to "loosen it up." Compress the plunger all the way and then pull back the plunger slightly	To ensure balloon is completely deflated <i>Dougherty &amp; Lister 2004</i>  Prevents the plunger from adhering to the front of the syringe barrel.
Gently insert the syringe in the catheter valve. Allow the pressure within the balloon to force the plunger back and fill the syringe with water.	Aspiration that is too rapid, or too forceful, may cause the inflation lumen within the Foley catheter to collapse (Bard 2012)
Ask child to breath in and out –gently remove catheter on exhalation.	To relax pelvic floor muscles, allowing easier removal of catheter <i>Dougherty &amp; Lister 2004</i>
Clean urinary meatus using water and cloth	To prevent risk of infection <i>Pratt et al. 2007</i>
Discard equipment appropriately.	Dispose of catheter and drainage bag in <b>Healthcare Non-risk Waste</b> . If contaminated with blood, dispose of in <b>Healthcare Risk Waste</b> <i>OLCHC 2010</i>

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Record intervention in the child's healthcare record;

- time/date catheter was removed and by whom
- any difficulties experienced during procedure
- if urine specimen was obtained
- volume of urine drained prior to catheter removal

To ensure effective communication through accurate recording of care. *An Bord Altranais 2002*

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## **6.8 Care of a Supra-Pubic Catheter for Urodynamics Studies**

A supra-pubic catheter is a urinary catheter that is inserted, through an artificial tract in the abdominal wall, just above the pubic bone and into the dome of the bladder. Urodynamic Studies are a functional assessment of the lower urinary tract to determine the pathophysiology of voiding dysfunction and lower urinary tract symptoms (Abrams et al. 2002).

### **Supra-pubic catheterisation for Urodynamics**

A double lumen cystometric supra-pubic catheter is a catheter inserted for the purpose of performing Urodynamics. In OLCHC the decision to insert a supra-pubic catheter is made by the Urology team. Insertion of a supra-pubic catheter for urodynamics is always performed in theatre under general anaesthetic.

As these catheters do not have a retaining balloon, they are held in situ using a suture and retention dressing. The retention dressing should be left undisturbed except on the instruction of the Surgeon/C.N.S Urodynamics. There may be leakage of urine from the catheter insertion site post-operatively: in this case the retention dressing should be re-enforced but not removed.

The catheter is usually inserted the day before the test and removed once the test is completed. Removal is usually performed by the Nurse Specialist who performs the urodynamics test. A pressure dressing is applied to the insertion site after removal of the catheter and left in situ for 24 hours.

### **Complications associated with Supra-pubic Catheters**


Catheter related urinary tract infection	Erosion of the bladder wall
Bladder spasm	Catheter encrustation
Bypassing, i.e. urine leaking around catheter	Injury to abdominal organs
Expulsion	Altered body image
Haematuria	(Ahluwalia et al. 2006, Harrison et al. 2010)

### **Types of Catheter**

The catheter used in this hospital for urodynamics is a double lumen cystometric supra-pubic catheter. The supra-pubic urodynamics catheter is sent to theatre with the child.

These catheters are only available in the Urodynamics Department. Please contact either the Urology CNSs on bleep 8592 to obtain same. All catheters should be used in accordance with manufacturer's instructions.

<b>Action</b>	<b>Rationale &amp; Reference</b>
Explain procedure to child/parent	To help prepare and support them for the procedure <i>Hockenberry and Wilson 2011</i>
All efforts must be made to protect the dignity and privacy of the child	To protect the best interests of the child <i>OLCHC 2007</i>
<b>Pre-operative care</b>	
The Urology team/C.N.S Urodynamics will assess the child to determine the need for a suprapubic catheter for urodynamics.	Only catheterise when clinically indicated to prevent undue trauma and risk <i>SARI 2011</i>
Attend to the child's routine pre-operative care ensuring child has had shower/bath prior to surgery.	To prevent risk of infection during surgery
<b>Post operative care:</b>	
ANTT Level 2 should be used when caring for insertion site until it is healed.	To prevent infection <i>OLCHC 2013, OLCHC 2010, SARI 2011, McQueen et al. 2012</i>
Use ANTT Level 3 when caring for the supra-pubic catheter unless you are "breaking" a connection, in which case ANTT Level 2 should be used.	

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Perform antiseptic hand hygiene before and after any handling of the catheter.

To prevent infection *OLCHC 2010*

The supra-pubic catheter is double-lumened, both of which will be clamped. The catheter is not connected to a drainage system.

The catheter is not usually required for drainage purposes

The child can urinate per urethra unless otherwise indicated. The child can also mobilise as normal.

**Care of the insertion site:**

A dressing will be in situ around the catheter insertion site post-operatively.

To absorb leakage or exudate *SARI 2011*

Do not remove or disturb the dressing as it holds the catheter in place. If site is oozing reinforce the dressing.

If the child complains of bladder pain which is not resolved with analgesia, then a relaxant such as Diazepam can be administered.

These medications may alter the Urodynamic results.

**NOTE:** Children with supra-pubic Urodynamic catheters in situ should not receive anti-cholinergic medication

**Removal of catheter**

- This is performed by the Urology CNSs after completion of the Urodynamics test.
- Prepare child and parents for procedure. Assess the child's level of pain and administer appropriate analgesia.
- Remove dressing using adhesive remover.
- Clean site using sterile saline and gauze.
- Cut suture if present and remove catheter by pulling same using slow steady movement.
- Clean site using saline and gauze.
- Apply appropriate dressing to entry site. Dressing can be removed in 24hrs.

To reduce the pain associated with the procedure, thus increasing the child's comfort

Discard equipment appropriately.

To absorb any leakage and to protect insertion site. **Note:** it is not unusual for the entry site to ooze urine for 2-3 hours post removal.

Dispose of catheter and drainage bag in **Healthcare Non-risk Waste**. If contaminated with blood, dispose of in **Healthcare Risk Waste** *OLCHC 2010*

Child should be encouraged to have a good fluid intake following removal of the catheter.

To ensure good bladder emptying with no bladder irritation. Sometimes post removal of catheter the child may have some haematuria which usually resolves with good fluid intake.

If concerned contact urology team.


Praise and thank the child, and ensure he/she is comfortable.

To maintain a trusting relationship between the child and nurse, and to promote the child's comfort *Hockenberry and Wilson 2011*

Record intervention in the child's healthcare record;

To ensure effective communication through accurate recording of care. *An Bord Altranais 2002*

- Date/Time of catheter insertion and removal
- Date and outcome of Urodynamic test
- Any difficulties experienced during procedure
- If urine specimen was obtained

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## 7.0 Special Consideration

Ensure latex free products and catheters are used if a patient has a known or suspected latex allergy.

## 8.0 Companion Documents

OLCHC (2013) Aseptic Non-Touch Technique Reference Guide

OLCHC (2012) Complex Post-op Careplan

## 9.0 Implementation Plan

### Communication and Dissemination

- Guidelines will be posted on hospital Intranet
- Hard copies of the guidelines will be included in the Nurse Practice Guideline Folder in each clinical area
- Email will be circulated to all staff informing them of issue of guideline
- Information will be circulated in NPDU Newsletter


### Training

- Education and training will be delivered at departmental level using existing educational resources, e.g. Clinical Nurse Facilitators
- Education is included in induction packages for relevant clinical areas / staff

## 10.0 Evaluation and Audit

Evaluation and Audit includes:


- Data in relation to CAUTI within specific services, e.g. Nephrology
- If trends in CAUTI, e.g. causative organism, are noticed, the Microbiology Dept will liaise with relevant teams / disciplines
- Feedback from clinical staff on the guidelines to contribute to ongoing guideline development

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## 12.0 Appendices

### Appendix 1: Outline of commonly used catheter materials *SARI 2011: 23*

Catheter Material	Recommended Usage*	Advantages	Disadvantages
Polyvinyl chloride (PVC)	Short-term use only	Wide lumen allowing rapid flow rate	Rigid and inflexible which may result in patient discomfort
Polyvinyl chloride non-balloon	Intermittent catheterisation (IC)	Suitable for single use for instillation of medications	Reusable IC catheters: Must be rinsed thoroughly after washing
Teflon coated with latex core	Short-term, up to 28 days	Smoother on external surfaces for insertion	Unsuitable for patients allergic to latex Teflon coating may wear thin if left to long in situ
Silicone	Long-term, up to 12 weeks	Wide lumen for drainage. May reduce the potential for encrustation  Suitable for patients with latex allergy	May have difficulty removing when placed in the suprapubic site due to 'cuffing' of the balloon.
Hydrogel coated latex	Long-term, up to 12 weeks	May reduce friction on the urethra mucosal during insertion  May reduce potential for encrustation	Unsuitable for patients allergic to latex
Silicone elastomer coated latex (silicone bonding to outer and inner surfaces)	Long-term, up to 12 weeks	May help to reduce potential for encrustation. May reduce mucosal irritation	Unsuitable for patients allergic to latex
Hydrogel coated silicone	Long-term, up to 12 weeks	May reduce friction on the urethra mucosal during insertion  Suitable for patients with latex allergy	Rigid material: May result in patient discomfort

\*Manufacturer's instructions should always be followed



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## Appendix 2: Urinary Catheter Troubleshooting Guide

If at any time the healthcare professional is concerned about the child or the urinary catheter, contact the child's medical / surgical team.

Catheter problem	Possible reason	Possible solutions
Urine not draining into bag.	<p>Drainage tubing may be kinked. Catheter may be blocked by debris.</p> <p>Incorrect positioning of the drainage bag above the level of the bladder can prevent good flow of urine. Incorrectly sited catheter; it may be in the urethra and not fully into the bladder.</p>	<p>Check tubing and ensure there are no kinks or obstruction Gently milk the catheter between thumb and forefinger to dislodge any debris etc. which may be blocking the tip of the catheter Ensure child is not constipated Ensure drainage bag is below level of bladder.</p> <p>Deflate retaining balloon and gently reposition. This should only be done as a last resort as there is a risk of the catheter dislodging.</p>
	<p><b>Note: re Flushing of urinary catheters</b> Routine flushing of indwelling urethral catheters is not recommended practice. Flushing of catheters should only be performed post reconstructive urological surgery <b>or</b> on the specific instructions of the surgical team. Prevention of catheter blockage by ensuring a good fluid intake and maintaining good urine drainage is of paramount importance. If a catheter appears blocked then the nurse looking after the child should check the child's fluid intake, use the measures outlined above. Flushing of catheters exposes the child to the introduction of infection to the bladder as well as the discomfort that can be associated with the procedure.</p>	
Bypassing of urine around catheter	<p>Catheter or tubing may be blocked / obstructed Incorrect positioning of drainage system</p> <p>Constipation Bladder spasm/instability May indicate presence of infection</p>	<p>Check tubing and ensure there are no kinks or obstruction Check drainage bag is in correct position, i.e. below level of the bladder Increase fluid intake and dietary fibre intake. Consider use of anti-cholinergic medications. Send sample of urine to laboratory for microbiological analysis</p>
Catheter retaining balloon will not deflate	<p>Valve port and balloon inflation channel may be compressed Faulty valve mechanism</p>	<p>Check no external compression problems.</p> <p>Valve port should always be aspirated slowly. If done forcefully, the valve mechanism may collapse. Attach the barrel of a syringe (without the plunger) to the valve for 20-30mins – gravity may help drain balloon. If attempts fail, medical advice must be sought. Cutting of the catheter along its length is not safe practice and may result in retraction of the catheter into the bladder.</p>
Haematuria	<p>Trauma post-catheterisation</p> <p>Calculi</p> <p>Infection</p>	<p>Review documentation re: insertion of catheter Observe output and document severity of haematuria. Encourage fluid intake. Report to medical team Send sample of urine to laboratory for microbiological analysis</p>
Pain or discomfort	<p>Catheter may be blocked The 'eyelets' (drainage openings) of the catheter may be occluded by urothelium due to hydrostatic suction. May be indication of infection.</p>	<p>Manage as outlined above Raise the drainage bag above the level of the bladder for 10-15 seconds only. This should only be done once and then consider other causes. Send sample of urine to laboratory for microbiological analysis</p>

(NHS QIS 2004, Pratt et al. 2007, Gould et al. 2009, SARI 2011, McQueen et al. 2012, RCN 2012)