



# URINARY CATHETERISATION AND CATHETER CARE IN ADULTS POLICY

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## Glossary

Term	Description

## 1 INTRODUCTION

This document provides evidence based guidance to support the delivery of a high standard of clinical care to patients undergoing urinary re-catheterisation. It encompasses intermittent, urethral indwelling and suprapubic indwelling catheters in male and female adults.

## 2 SCOPE OF POLICY

The policy applies to all BADGER nursing staff with a responsibility for the re-catheterisation and catheter care of adults over the age of 18 years. It excludes children.

## 3 THE RISKS OF URINARY CATHETERISATION

Urinary catheterisation is an intervention performed by health care workers to enable emptying of the bladder, to facilitate instillation of a solution or medication, or to dilate a urethral stricture by insertion of a catheter. Catheterisation is a common procedure, yet it carries many risks including trauma, urinary tract infection, encrustation, urethral perforation, bladder calculi and neoplastic changes (Lowthian, 1998). It should therefore be the therapy of choice only when all other interventions are deemed to be inappropriate or have been unsuccessful (Winn, 1998).

Patients having a catheter inserted as part of their clinical care are in significant danger of acquiring a catheter associated urinary tract infection (CAUTI). The risk of CAUTI is associated with the method and duration of catheterisation, the quality of catheter care and host susceptibility (Pratt et al 2007). The commonest site for healthcare associated infection is in the urinary tract and 80 percent of urinary infections are traceable to indwelling urinary catheters. These infections arise because catheters traumatise the urethra as well as providing a pathway for bacteria and other organisms to enter the bladder. The longer a catheter is in situ the higher the risk of infection.

About 50% of patients catheterised for longer than 7-10 days contract bacteriuria. Although frequently asymptomatic, 20 to 30% of patients with catheter-associated bacteriuria will develop symptoms of CAUTI. Once a CAUTI has developed there is a 1 to 4% risk of developing bacteraemia with an associated mortality rate of 13 to 30% (Pratt et al, 2007). Patients who develop CAUTIs in primary care settings have greater contact with their general practitioner (GP), visit the hospital more frequently for outpatient appointments and receive more visits from district nurses.

## 4 INDICATIONS FOR CATHETERISATION

Indications for catheterisation include:

- Patients with neurological disease or injury who have difficulty in completely emptying the bladder
- Patients with outlet obstruction who may be unfit for, or are awaiting surgical repair
- Patients who are chronically incontinent, often with associated debility or confusion where other methods are inappropriate or unsuccessful
- Bladder drainage pre-, peri- and post-operatively
- Acute or chronic retention of urine
- Investigations where measurement of residual urine is required. However bladder scanning is the preferred method of measuring residual volume
- Instillation of prescribed drugs in to the bladder
- Monitoring urine output
- Terminally ill patients where catheterisation is deemed appropriate

- In exceptional circumstances urinary catheterisation may be necessary to avoid wound contamination and facilitate wound dressing to allow optimal conditions for healing, e.g. sacral pressure ulcers.
- Catheters may be self retaining for continuous or intermittent drainage, or intermittent for periodic insertion.

## 5 CONSENT

Consent from the patient should be obtained and the process recorded at every re-catheterisation. In order to ensure that consent is fully informed, a thorough explanation should be given to the patient. The five key principles of the Mental Capacity Act (2005) need to be taken into consideration when obtaining consent from the patient:

- A presumption of capacity
- Individuals should be supported to make their own decisions
- Unwise decisions
- Best interests
- Least restrictive option

Documenting the giving of consent for catheter usage and ongoing catheter care is vital from a professional, ethical and legal perspective.

## 6 DOCUMENTATION AND AUDIT

Re-catheterisation and all catheter care must be documented in accordance with the Nursing and Midwifery Council Guidance for Record Keeping (NMC, 2007). You need to record clearly, accurately, and correctly any relevant information in the ongoing catheter care records. You also need to be aware of the importance of documentation, the data protection act, care of patient records and disclosure of information with consent from the patient and the legal and professional consequences of poor practice.

This must include:

- Initial assessment
- Reason for re-catheterisation
- Evidence of patients informed consent for re-catheterisation.
- Type of re-catheterisation
- Type of catheter, material, manufacturer, length, Charriere (Ch) size, batch number and expiry date.
- Make and type of lubricating gel used, batch number and expiry date
- Date and time of insertion and by whom
- Volume of urine drained
- Any complications encountered
- Type of drainage system
- Evidence of any advice given

## 7 RESPONSIBILITIES AND TRAINING

As a Registered Nurse, you must acquire knowledge, understanding and skills relating to the supervised delivery of urinary catheter care and re-catheterisation, to ensure competency in line with acceptable standards to meet patient service needs. You must inform the Team Leader/Supervisor or/and clinician immediately, if you feel you are not competent to undertake urinary re-catheterisation when requested to undertake a home visit.

## 8 INFECTION PREVENTION AND CONTROL

Good hygiene is essential to minimize the risk of catheter associated urinary tract infections (CAUTIs). Hand decontamination should always be performed; hand washing with liquid soap and running water, and drying hands with paper towels removes the majority of transient micro-organisms. This should occur before and after re-catheterisation, emptying, disconnecting or changing the drainage system. Alcohol gel can be used as an alternative to liquid soap and water on visibly clean hands.

Plastic aprons and sterile latex free gloves should be worn during catheter insertion to ensure personal protection and infection prevention and control. Personal protective equipment (PPE) is worn to prevent the transmission of micro-organisms to the patient and prevent the risk of contamination of the healthcare practitioner's clothing and skin. Before commencing any procedure, check all stock to ensure it is in date.

## 9 INDWELLING URETHRAL CATHETERISATION

### 9.1 Catheter selection

#### 9.1.1 Diameter

The smallest catheter possible should be used, that still allows good drainage. A larger catheter may be used to facilitate drainage if clots or debris have been or are likely to be a problem. The external diameter is measured in Charriere (Ch) size also known as French (Fr) gauge.

- 10-14 Ch for drainage of clear urine
- 14-16 Ch for urine containing debris or small clots
- 18 Ch or above if haematuria or large clots present and at doctor's request

#### 9.1.2 Length

Catheters should be selected from the three available lengths to meet the assessed needs of individual patients:

- Female length catheter 20-26cm (females only) although obese or chair bound patients may prefer a standard length catheter
- Standard length catheter 40-45cm for male or female patients (males must always be catheterised with a standard length catheter)

#### 9.1.3 Balloons

Indwelling catheters are kept in place by inflating a balloon, after the catheter is in the bladder.

Catheter balloon sizes come in three different volumes:

- 3-5ml for **paediatric** use
- 10ml for adult routine drainage
- 30ml for post-urological procedures only and **not for routine catheterisation.**

Balloons must be filled with the exact amount of sterile water stated. Over or under inflation of the balloon can cause distortion which can deflect the catheter tip and interfere with drainage or cause irritation. Balloons should be inflated according to manufacturer's instructions. Some balloons require inflation with a syringe and sterile water, others are pre-filled.

## 9.2 Catheter materials recommended for short term use (up to 28 days)

*Ensure that you always check manufacturers recommended duration*

Catheter material	Advantage	Disadvantage
<b>Plastic/PVC</b> (Should not be left in situ for longer than 7 days).	Large Internal diameter allows good drainage postoperatively.	Rigid and inflexible May cause urethral discomfort.
<b>Silver alloy hydrogel coated latex</b> (Certain brands may be left in situ for longer than 28 days).	Inhibits bacterial growth, reduces incidence of UTI (Saint, 1998) Low surface friction and improved patient comfort (Pratt et al, 2007).	Unsuitable for people with latex allergies.
<b>PTFE coated latex</b>	Smoother outer surface - reduces tissue damage and more resistant to encrustations	Unsuitable for people with latex allergies.

## 9.3 Catheter materials recommended for long term use (up to 12 weeks)

*Ensure that you always check manufacturers recommended duration*

Catheter material	Advantages	Disadvantages
<b>Hydrogel coated latex</b>	More compatible with body tissue, less trauma Low surface friction, improved patient comfort	Unsuitable for people with latex allergies.
<b>Hydrogel Coated silicone</b>	Suitable for patients with a latex allergy	Rigid and can be uncomfortable Can be difficult to remove due to formation of a cuff on balloon deflation.
<b>Silicone elastomer coated latex</b>	Smooth internal and external surfaces. May reduce potential for encrustation	Unsuitable for patients who are allergic to latex.
<b>All Silicone</b>	Suitable for patients with a latex allergy Thin walled catheter with a larger lumen than a coated catheter.	Rigid and can be uncomfortable Can be difficult to remove due to formation of a cuff on balloon deflation, and can be more difficult to remove supra-pubically.

## 9.4 Drainage systems

A huge range of leg bags, night bags, belly bags and valves are available. It is important to consider the individual's needs when selecting an appropriate drainage system. In care homes, single use night drainage bags should be used to minimize cross-infection. In the individual's own home, a reusable night drainage bag may be used in accordance with manufacturer's instructions.

## 9.5 Lubrication

NICE (2003) state that 'an appropriate lubricant from a single-use container should be used during catheter insertion to lubricate the urethra adequately to minimise urethral trauma and infection'. There is research to support the use of an anesthetic lubricating gel containing lidocaine to minimise pain and discomfort in both men (Sidarias et al, 2004) and women (Chung et al, 2003). In the event of a patient having a known contra-indication or allergy to anaesthetic lubricating gel, a plain lubricating gel may be used.

### 9.5.1 Risks of using anaesthetic lubrication gels

It is important to be aware of the risks of using lubrication gels containing lidocaine, although topical usage is considered to pose a minimal risk to the patient. **Both Instillagel® and Cathejell with Lidocaine® are contraindicated in patients with known sensitivities to any of the active ingredients, and in those patients who have damaged or bleeding urethral membranes.** This is due to the increased risk of systemic absorption of lidocaine hydrochloride which may exacerbate ventricular arrhythmias and cause hypotension (Katzung 1995).

Lidocaine should also be used cautiously in patients taking antiarrhythmic medication or patients with impaired cardiac conditions, hepatic insufficiency and epilepsy (BNF 2007).

The MHRA (2005) reported 34 reactions to Instillagel®, with eight of these being anaphylactic in nature, and none of them fatal.

Addison (2000) advised caution in regard to the use of lidocaine particularly on patients with an increased risk of the systemic effects of lidocaine, advising that if the patient's pulse or breathing rate are slow, consider using a gel not containing lidocaine.

## 9.6 Procedures for inserting an indwelling urethral catheter into adults

### 9.6.1 Equipment required:

- Sterile catheterisation pack
- Two pairs of latex free sterile gloves
- Selection of appropriate catheters
- Sterile anesthetic lubrication gel
- Alcohol hand gel
- Sterile water, syringe and needle
- Sodium chloride 0.9%
- Disposable plastic apron
- Suitable drainage bag and support system.



## 9.6.2 Procedure for females

Action	Rational
Explain and discuss the procedure with the patient. Obtain and document informed consent	To ensure that the patient understands the procedure and gives her valid consent.
Wash hands or use alcohol gel.	To reduce risk of infection.
Prepare the environment, and ensure there is a clean flat surface close to the bed	To ensure patient's privacy and dignity. To allow dust and airborne organisms to settle before the sterile field is exposed.
Assist the patient to get into the supine position with knees bent, hips flexed and feet resting about 60 cm apart. If not possible consider suitable alternative position.	To enable the genital area to be seen.
Ensure that a good light source is available.	To enable genital area to be seen clearly.
Wash hands again or use alcohol gel.	To reduce risk of cross-infection.
Put on a disposable apron.	To reduce risk of cross-infection from micro-organisms on uniform
Open the catheterisation pack on to the prepared surface.	To maintain an aseptic procedure.
Using an aseptic technique open the packages of equipment onto the sterile field and fill the syringe with sterile water, if required.	To reduce the risk of introducing infection into the urinary tract.
Re wash hands or use alcohol gel.	Hands may have become contaminated by handling of outer packs, etc.
Put on latex free sterile gloves.	To reduce risk of cross-infection and allergic reaction.
Place sterile towels between the patient's thighs.	To create a sterile field.
Using gloved fingers of one hand, separate the labia minora so that the urethral meatus is seen.	This manoeuvre provides better access to the urethral orifice and helps to prevent labial contamination of the catheter.
Clean around the urethral orifice with 0.9% sodium chloride, using single downward strokes.	To reduce the risk of cross-infection. Inadequate preparation of the urethral orifice is a major cause of infection following catheterisation.
Insert the nozzle of the anaesthetic lubrication gel into the urethra. Squeeze 6ml into the urethra, remove the nozzle and discard the tube. Wait 5 minutes for it to take effect.	Adequate lubrication helps to prevent urethral trauma. Use of a local anaesthetic minimizes the patient's discomfort.

Place the catheter, in the receiver, between the patient's legs.	To provide a temporary container for urine as it drains.
Gently introduce the tip of the catheter into the urethral orifice. Advance the catheter 5-6cm or until urine starts to flow, then advance it a further 6-8cm	This prevents the balloon from being trapped in the urethra.
Inflate the balloon according to the manufacturer's directions, having ensured that the catheter is draining adequately.	Inadvertent inflation of the balloon within the urethra is painful and causes urethral trauma.
Withdraw the catheter slightly until the balloon is sitting at the bladder neck, and connect it to the drainage system.	Maintain patient comfort and prevent urethral trauma.
Support the catheter; ensure that the catheter does not become taut when patient is mobilising. Ensure that the catheter lumen is not occluded by the fixation device.	To maintain patient comfort and to reduce the risk of urethral and bladder neck trauma.
Make the patient comfortable and ensure that the area is dry.	If the area is left wet or moist, secondary infection and skin irritation may occur.
Measure the amount of urine.	To ensure volume of urine in bladder at time of catheterisation is recorded. (During routine re – catheterisation there should be a minimal amount of urine in the bladder).
Dispose of equipment safely.	To prevent environmental contamination.
Remove gloves and rewash hands or use alcohol gel.	Infection prevention and control.
Record details of catheterisation contemporaneously in relevant documents.	To ensure accountability.

### 9.6.3 Procedure for males

Action	Rationale
Explain and discuss the procedure with the patient. Obtain and document informed consent.	To ensure that the patient understands the procedure and gives his valid consent.
Wash hands or use alcohol gel.  Ensure the genitals are clean.	To reduce the risk of infection.
Prepare the environment, and ensure there is a clean flat surface close to the bed.	To ensure patient's privacy. To allow dust and airborne organisms to settle before the sterile field is exposed.
Assist the patient to get into the supine position with the legs extended.	To ensure the genital area is easily accessible.
Wash hands or use alcohol gel.	To reduce risk of infection.

Put on a disposable plastic apron.	To reduce risk of cross-infection from micro-organisms on uniform
Open the catheterisation pack on to the prepared surface.	To maintain an aseptic procedure.
Using an aseptic technique, open the packages of equipment onto the sterile field and fill the syringe with sterile water, if required.	To reduce the risk of introducing infection into the urinary tract.
Rewash hands clean with alcohol gel.	Hands may have become contaminated by handling the outer packs.
Put on sterile latex free gloves.	To reduce risk of cross-infection and allergic reaction.
Place sterile towels across the patient's thighs.	To create a sterile field.
Wrap a sterile topical swab around the penis. Retract the foreskin, if necessary, and clean the glans penis and meatus with sterile 0.9% sodium chloride.	To reduce the risk of introducing infection to the urinary tract during catheterisation.
Insert the nozzle of the lubricating gel into the urethra. Slowly squeeze minimum of 10mls of gel into the urethra, remove the nozzle and discard the tube.	Adequate lubrication helps to prevent urethral trauma. Use of a local anaesthetic minimizes the discomfort experienced by the patient.
If anaesthetic gel has been used wait approximately 5 minutes.	To allow the anaesthetic gel to take effect.
Grasp the penis behind the glans, raising it until it is almost totally extended. Maintain grasp of penis until the procedure is finished.	This manoeuvre straightens the penile urethra and facilitates catheterisation. Maintaining a grasp of the penis prevents contamination and retraction of the penis.
Place the receiver containing the catheter between the patient's legs. Insert the catheter for 15–25 cm until urine flows.	The male urethra is approximately 18 cm long.
If resistance is felt at the external sphincter, increase the traction on the penis slightly and apply steady, gentle pressure on the catheter. If resistance is still felt, try pausing for a few seconds or ask the patient to cough or strain gently as if passing urine and continue to insert the catheter.	Some resistance may be due to spasm of the external sphincter, or an enlarged prostate. Straining gently or coughing helps to relax the external sphincter.
When urine begins to flow, advance the catheter almost to its bifurcation.	Advancing the catheter ensures that it is correctly positioned in the bladder.
Gently inflate the balloon according to the manufacturer's direction, having ensured that the catheter is draining properly beforehand.	Inadvertent inflation of the balloon in the urethra causes pain and urethral trauma.
Withdraw the catheter slightly and attach it to the selected drainage system.	To ensure that the catheter is correctly positioned in the bladder.

Support the catheter, if the patient desires by using a specially designed support. Ensure that the catheter does not become taut when patient is mobilizing or when the penis becomes erect.	To maintain patient comfort and to reduce the risk of urethral and bladder neck trauma.
Ensure that the glans penis is clean and then reposition the foreskin. Make the patient comfortable and ensure that the area is dry.	Retraction and constriction of the foreskin behind the glans penis (paraphimosis) may occur if this is not done. If the area is left wet or moist, secondary infection and skin irritation may occur.
Measure the amount of urine.	To ensure volume of urine in bladder at time of catheterisation is recorded.  (During routine re –catheterisation there should be a minimal amount of urine in the bladder).
Dispose of equipment safely.	To prevent environmental contamination.
Remove gloves and wash hands using liquid soap and running water or use alcohol gel.	Infection prevention and control.
Record information contemporaneously in relevant documents	To ensure accountability.

*Note:* beware of patient having a vasovagal attack. This is caused by the vagal nerve being stimulated so that the heart slows down, leading to a syncope faint. If it happens, lie the patient down in the recovery position and seek medical help.

## 9.7 Removal of indwelling urethral catheters

### 9.7.1 Equipment:

- Disposable latex free gloves and apron
- Syringe for deflating balloon

Action	Rationale
Explain procedure to patient and obtain informed consent. Discuss care plan following removal of catheter.	To ensure that the patient understands the procedure and gives informed consent.
Wash hands using liquid soap and running water or use alcohol gel.	Infection prevention and control.
Prepare the environment.	To ensure that the patient is comfortable and privacy and dignity is maintained.
Ensure genitalia have been cleaned prior to catheter	To reduce risk of infection.

removal.	
Release catheter drainage support system and empty catheter drainage bag.	For easier removal and disposal of catheter and drainage system.
Having checked volume of water originally inserted into balloon (see patient documentation), use syringe to deflate balloon.  NB: The amount removed may be less than that inserted due to the semi – porous nature of the balloon.	To ensure balloon is completely deflated before removing catheter.
Gently remove catheter. If resistance is felt, ask the patient to cough. If removal of the catheter is difficult seek medical help.	To relax pelvic floor muscles and facilitate catheter removal.  To ensure patient safety.
Ensure patient is comfortable. If catheter is not being replaced, ensure appropriate advice and information is given.  Document voiding pattern.	To ensure patient is aware of management plan.  If available, a portable bladder scanner should be utilised to measure residual volumes in the first few days after catheter removal and action taken, if problems arise.
Dispose of equipment safely.	To prevent environmental contamination.
Remove gloves and apron, wash hands or use alcohol gel.	Infection prevention and control.

## 9.8 Problem solving with indwelling urethral catheters

Problem	Cause	Action
<b>Urine bypassing</b>	Balloon/catheter gauge too big.	Select 10ml balloon or smaller gauge catheter
	Catheter blocked by debris.	Remove and re-catheterise After removal, cut catheter in half and check for encrustation. Consider a programme of catheter maintenance solution where appropriate (see Section 11).
	Bladder spasm / instability.	Consider anticholinergic medication.
	Constipation.	Increase fluid intake, give dietary fibre advice and advise on contacting own GP re: laxatives if needed.
<b>Urine does not drain</b>	Blocked catheter.	Remove and re-catheterise Cut catheter in half and check for encrustation. Assess suitability for a programme of catheter maintenance solution.
	Kinked drainage tubing.	Inspect the system and straighten any kinks

	Leg bag above the level of the bladder.	Re-position catheter bag.
	Constipation.	Treat accordingly (see above).
	Bladder Spasm.	May need a smaller catheter Consider anti-cholinergic medication (seek medical advice).
	Dehydration.	Treat accordingly.
<b>Catheter is encrusted</b>	Micro-organisms sticking to catheter surface.	Consider catheter maintenance solutions
<b>Non deflating balloon</b>	Valve port and balloon inflation channel may be compressed.  Faulty valve mechanism	Check no external compression problems  Remove the syringe and try another one, always aspirate slowly or the valve mechanism may collapse A few ml of sterile water can be added to the valve to clear any obstruction but do not over inflate the balloon Do not cut the catheter during removal Seek medical help if unable to remove catheter.
<b>Haematuria</b>	Trauma or infection.	Observe output, encourage fluids Treat infection if symptomatic.
	Tension on catheter due to inadequate support.	Ensure catheter and drainage bag is appropriately secured and supported.
	Persistent haematuria.	Seek medical advice

## 10 SUPRAPUBIC CATHETERISATION

For some people a suprapubic catheter may be indicated for the following reasons:

- Where urethral catheterisation is not possible (i.e. urethral stricture)
- It is the patients preferred choice
- Protection of the urethra from trauma
- Greater freedom for expressing sexuality
- Improved patient comfort and easier management of catheter changes
- Where limb contractures make urethral catheter insertion and management difficult
- Post-operatively for bladder drainage or to monitor residual volumes

Contraindications for suprapubic catheterisation include:

- Unexplained haematuria
- Previous lower abdominal surgery
- History of bladder tumours
- Blood clotting disorders
- Ascites
- Suspicion of ovarian cyst
- Very obese patients

**The insertion of the first suprapubic catheter is usually performed in hospital by a urology specialist.** The size of catheter used should be no smaller than 16Ch in adults with a 10ml balloon, unless otherwise specified by an appropriate specialist. A larger charriere size may be used if the catheter persistently blocks.

Catheters used must be licensed for supra-pubic use. Individual choice must be considered regarding the length of the catheter as longer catheters may be easier for some individuals to manage, whilst others will prefer the option of a shorter, more discreet catheter.

If the catheter becomes dislodged it should be replaced within 30-45 minutes or the tract may be difficult to re-catheterise. Community patients and carers in the community should have spare equipment and the relevant contact telephone numbers. If the catheter becomes blocked or dislodged within the first four weeks of initial insertion expert medical advice should be sought.

## 10.1 Lubrication in suprapubic catheterisation

Anaesthetic / lubrication gel may be instilled into the stoma or applied to the new catheter as required to allow smoother passage of the catheter and reduce trauma. Removal of a suprapubic catheter may be facilitated by the insertion of lubrication gel down the side of the catheter to lubricate the tract.

## 10.2 Procedure for suprapubic catheter change

### 10.2.1 Equipment:

- Sterile catheterisation pack
- Two pairs of latex free sterile gloves
- Selection of approved catheters
- Sterile lubrication gel
- Alcohol hand gel
- Sterile water, two syringes and needle
- Sterile saline
- Disposable plastic apron
- Suitable drainage bag and support system

Action	Rationale
Explain and discuss the procedure with the patient.	To ensure that the patient understands the procedure and gives his valid consent.
Wash hands with liquid soap and running water, or use alcohol gel.	Infection prevention and control.
Prepare the environment, and ensure there is a clean, flat area close to the bed.	To ensure patient's privacy. To allow dust and airborne organisms to settle before the field is exposed.
Assist the patient to get into a comfortable position on the bed. Expose the catheter entry site. Empty the catheter bag.	To ensure the catheter site is easily accessible.
Wash hands or use alcohol gel.	Infection prevention and control.
Put on a disposable plastic apron.	To reduce risk of cross-infection from micro-organisms on uniform.
Empty the contents of the sterile packages on to the prepared surface.	To maintain an aseptic procedure and reduce the risk of introducing infection into the urinary tract.

Fill the syringe with the appropriate amount of sterile water if required.	
Deflate the existing catheter balloon using a second syringe.	To deflate balloon to allow catheter removal.
Holding a gauze swab with one hand, remove the catheter with the other hand, noting the direction and length of catheter that was inserted. Place the gauze swab over the site to absorb any leakage. Observe removed catheter for encrustation.	To facilitate comfortable removal and replacement of catheter.
Dispose of removed catheter and used equipment according to waste disposal policy. Remove gloves.	To ensure infection prevention and to prevent environmental contamination.
Wash hands or use alcohol gel.	Infection prevention and control.
Put on sterile latex free gloves.	To reduce risk of cross-infection and allergic reaction.
Place sterile towels across the patient's abdomen.	To create a sterile field.
Clean the suprapubic catheter site with sterile saline, using a single wipe with each swab.	To reduce the risk of introducing infection to the urinary tract during catheterisation.
Place the receiver containing the catheter on to the patient's thighs. Apply lubricating gel to the tip of the catheter and suprapubic site.	To minimise trauma and discomfort.
Holding the catheter with the sterile gauze insert it in to the suprapubic catheter site, to the same distance as the removed catheter plus 4 centimetres. Inflate the balloon with sterile water according to manufacturer's instructions.	To ensure that the catheter is positioned safely in the bladder.
Ensure that the catheter is mobile in the tract.	To ensure that catheter is correctly positioned in to the bladder.
Attach drainage bag and suitable support system or catheter valve.	To maintain a closed system.
Apply dressing to catheter insertion site if necessary	To absorb any exudate.
Make patient comfortable and give advice on fluids.	To promote catheter drainage
Observe drainage of urine from catheter.	To ensure catheter correctly positioned.
Dispose of equipment safely.	To prevent environmental contamination.
Remove gloves and apron, and wash hands or use alcohol gel.	Infection prevention and control.
Record information contemporaneously in relevant documents.	To ensure accountability.



## 11 CATHETER MAINTENANCE SOLUTIONS

Some patients may benefit from the use of catheter maintenance solutions to prolong the life of their catheter, avoiding the trauma of re-catheterisation. However, catheter maintenance solutions should only be used following careful assessment rather than as routine practice, and in accordance with manufacturer's instructions.

There are many potential causes of catheter blockage, and treatment should be based on clinical evidence, following thorough assessment. Records of catheter history must be maintained including:

- Problems associated with bowel habit
- Debris in urine
- Crystals on catheter tip at removal
- Urinary pH.

In a first time blockage, where there is no evidence of the cause of the blockage, the catheter should be removed, examined, and the urine tested to explore the possible causes of blockage. The findings should be recorded. This will give a basis for obtaining a prescription for an appropriate catheter maintenance solution.

Where a catheter maintenance solution may be beneficial, the solution used must be appropriate to the condition being treated, holistic to the patients needs. However, the administration of catheter maintenance solutions requires breakage of the closed drainage system increasing the risk of introducing infection, and antibiotic solutions are not usually effective in treating CAUTIs.

Records must be kept of the solution used, its effect on catheter drainage, any adverse effects and ongoing catheter history.

### 11.1 Selection of catheter maintenance solutions

Solution	Product Licence	Practice Notes/Cautions
Citric acid 3.23% Solution G (pH 4)	For the dissolution of struvite crystals which form on the catheter tip under alkaline conditions (pH 7.5-9.5).	Charting of urinary pH over time will allow development of an individual catheter care plan.
Citric acid 6% Solution R (pH 2)	Stronger citric acid solution for more persistent crystallisation.	Strongly acidic – potential mucosal irritation.
Mandelic acid 1% (pH 2)	For the reduction of micro-organisms which produce urease creating alkaline conditions (mostly proteus species).	Acidic pH also counters the effect of proteus on the urinary pH. Strongly acidic – potential mucosal irritation. Evidence shows that 19 days treatment of twice daily instillations are required to effect treatment, but the license is for maximum 14 days' use.
Sodium chloride 0.9%	For the washing of debris (blood, mucus, pus) from the catheter.	Will not dissolve crystal formation.
Chlorhexidine 0.02%	For the treatment of pseudomonas infections.	Limited value as the infections will exist in a biofilm which resists surface washing of

		antibiotics. Likely to lead to flourishing of resistant organisms.
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## 11.2 Procedure for insertion of catheter maintenance solution

### 11.2.1 Equipment:

- Disposable apron
- New drainage bag
- Prescribed maintenance solution
- Latex free disposable gloves
- Sterile dressing pack
- Absorbent sheet

Method	Rationale
Explain the procedure to the patient, obtain their informed consent.	To ensure valid consent is obtained.
Make the patient comfortable in a semi prone position.	
Wash hands using liquid soap and running water, alternatively use alcohol hand gel – dry hands. Put on apron.	Infection prevention and control.
Remove leg bag straps and position leg bag beside patient. Prepare the aseptic field and remove outer packaging from the catheter maintenance solution and place on sterile field.	Infection prevention and control.
Expose the length of the catheter and observe for signs of leakage and meatal problems. Place absorbent sheet under catheter drainage bag junction.	To prepare patient for the procedure and check for catheter displacement.
Wash hands using liquid soap and running water, alternatively use alcohol hand gel – dry hands. Put on latex free sterile gloves.	Infection prevention and control.
Disconnect the drainage bag (or valve), attach catheter maintenance solution and instil in accordance with the manufacturer's instruction.	Correct instillation of solution.
If the fluid is to be retained for a period of time, close the clamp, and place the bag on the bed. Ensure that the client is warm and comfortable for the required time.	
When the solution is removed ensure the new catheter bag (or valve) is firmly attached and below the level of the bladder and draining.	To facilitate drainage.
Make the patient comfortable.	To maintain dignity.
Remove and dispose of equipment.	To prevent environmental contamination

Remove gloves. Wash hands using liquid soap and running water, alternatively use alcohol hand gel – dry hands. Remove apron.	Infection prevention and control.
Document that the catheter maintenance solution has been administered and note any complications encountered with the procedure.	To maintain accurate records.

## 12 GLOSSARY OF TERMS

Term	Definition
<b>Anti-cholinergic</b>	Medication that reduces bladder spasm.
<b>Assessment</b>	A thorough review of the patient's condition, by questioning, observation, physical examination and investigations.
<b>Aseptic technique</b>	A method of carrying out sterile procedures so that there is minimum risk of introducing infection. Sterile equipment is used and sterile gloves worn or a no-touch technique is used.
<b>Bacteraemia</b>	The presence of bacteria in the bloodstream.
<b>Bacteriuria</b>	The presence of bacteria in the urine.
<b>Catheter valve</b>	A valve connected to the outlet from the catheter allowing the bladder to be drained intermittently by opening the valve at regular intervals.
<b>Haematuria</b>	The presence of blood in the urine.
<b>pH</b>	A scale which gives the acidity or alkalinity of the urine. pH <7 is acidic and pH >7 is alkaline
<b>Paraphimosis</b>	Retraction and constriction of the foreskin behind the glans penis
<b>PPE Personal protective equipment</b>	This includes disposable aprons and gloves.
<b>Suprapubic catheterisation</b>	insertion of a catheter in to the bladder through a tract in the abdominal wall
<b>Urethral stricture</b>	Narrowing of the urethra causing inhibition of urinary flow

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