

# BARD® A Guide for Nurses

BARD® Comprehensive Care  
Management of Catheters  
and Collection Systems



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# Introduction

## **Why this guide has been developed**

Urinary catheterisation is a common nursing procedure in both acute and community settings.

It is however, not without risk and often associated with complications, such as trauma, urinary tract infection, stricture formation, urethral perforation, encrustation, bladder calculi and neoplastic changes (Lowthian 1998). Urinary catheterisation is also a significant cause of healthcare associated infection (Pratt et al, 2001).

Because of these potential health risks, catheterisation should only be undertaken where all other interventions are inappropriate, or have been unsuccessful (Winn 1998).

Selection of the most appropriate catheter is very important for patient comfort.

# Clinical Indications for Catheterisation and Introducing Catheters

Catheterisation is required for a number of reasons in many clinical settings including:

## Drainage

Before and after surgery, acute or chronic urinary retention, intractable urinary incontinence (last resort), accurate monitoring of urine output.

## Investigation

Measurement of residual urine (amount of urine that remains in the bladder after emptying), bladder function tests.

## Treatment

Instillation of drugs.

## Introducing Catheters

**Catheters may be self-retaining for continuous drainage, or intermittent for periodic insertion.**

A Foley catheter is a flexible hollow tube that is inserted into the bladder to drain urine. It is retained in place by inflating an integral balloon. Nelaton catheters, without inflating balloons, are used for intermittent catheterisation.

It is the responsibility of the nurse to make a full assessment of the needs of each patient and to ensure that the catheterisation is for the benefit of the patient.

## Consent for Catheterisation

The first catheterisation normally requires medical consent from the consultant, GP or doctor responsible for the patient's care. This should be clearly documented in the patient's notes stating the date, time and name of the doctor who has given their consent. A straightforward routine re-catheterisation, or change of a blocked catheter does not normally require medical consent, but for guidance on consent always check local policy.

As outlined in the Nursing and Midwifery Council Code of Professional Conduct and Department of Health Reference Guide to Consent for Examination or Treatment, the patient must also give valid consent to the procedure.

The following points should be taken into account:

- Is the consent valid? (e.g. it must be given voluntarily, by an appropriately informed patient)
- Is the patient legally competent? (e.g. are they able to understand and retain treatment information and can they use it to make an informed choice?)
- Is the consent given voluntarily? (e.g. has the consent been given freely, without pressure or undue influence on the patient to agree to the procedure?)
- Has the patient received sufficient information? (e.g. does the patient fully understand the nature and purpose of the procedure?)
- Has consent to the procedure been documented in the patient's records? (e.g. a patient can give written consent, verbal consent or consent by co-operating with the procedure)

The legal position concerning consent for children and young people under the age of 18 is different from adults and it is therefore advisable to liaise with the local paediatric services for guidance.

Consent policy does vary within the UK and nurses should therefore check local consent policy before proceeding with catheterisation.

# Types of Catheterisation

A Foley catheter can be used to drain urine from the bladder by inserting the catheter either via the urethra, or through an artificial tract in the abdominal wall, just above the pubic bone, called suprapubic catheterisation. The urethral route is most commonly used, although the suprapubic route is becoming more popular.

## Advantages/Disadvantages of Urethral Catheters

### Urethral Route

#### Advantages

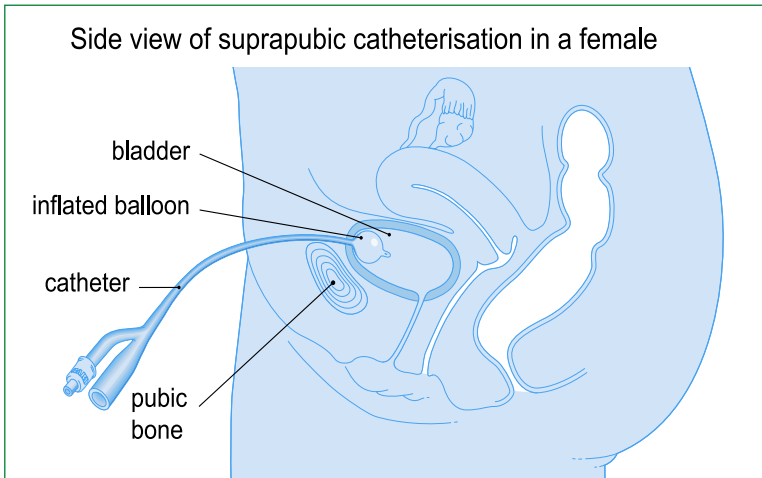
- ▶ Does not need surgical incision
- ▶ Relatively simple procedure which can be undertaken by less experienced nurses
- ▶ May be used for both intermittent and indwelling catheters
- ▶ May be removed for episodes e.g. sexual activity
- ▶ Patients/carers can be trained to change indwelling catheters and intermittent catheters
- ▶ Allows easy measurement of residual urine

#### Disadvantages

- ▶ May damage urethra
- ▶ Problems with leakage, bypass and expulsion common (Pomfret 1999)
- ▶ Higher risk of symptomatic urinary infection (Winder 1994)
- ▶ May be uncomfortable
- ▶ 50% of patients indwelling catheters are prone to blockage (Morris, Stickler 1998)

## What is Suprapubic Catheterisation?

More accurately called a cystostomy, it is a method of draining the bladder by means of a catheter inserted through an incision made in the abdominal wall, just above the pubic bone. Patients are given a small local anaesthetic into the abdominal wall or a very light general anaesthetic. This procedure is generally undertaken by medical staff in hospital.



## Understanding Suprapubic Catheters

Traditionally, suprapubic catheterisation was seen as a fallback technique if urethral catheterisation failed. However, in the last 10 years the use of suprapubic catheters has become increasingly popular, for both short and long-term resolution of urinary problems.

## When is a Suprapubic Catheter Indicated?

It is commonly used for patients with urethral scarring, after pelvic or urological surgery or severe pelvic trauma, in patients who may require life-long use of a catheter, such as those with spinal injuries and for patients who are sexually active.



# Are there Any Contra-Indications to Using a Suprapubic Catheter?

The only absolute contra-indications are the presence of unexplained haematuria and bladder tumour. However, there are other potential contra-indications (see table below).

## Indications/Contra-Indications for Indwelling Suprapubic Catheters

### Suprapubic

#### Indications

- ▶ Acute/chronic urinary retention
- ▶ Unable/unwilling to perform intermittent catheterisation
- ▶ Persistent expulsion of urethral catheter (spasm/deliberate)
- ▶ Anatomically difficult to catheterise urethrally
- ▶ Mobility problems
- ▶ Intractable incontinence (last resort)
- ▶ Lifestyle choice

#### Contra-Indications

- ▶ Unable to fill bladder to a minimum of 300mL
- ▶ Previous lower abdominal surgery
- ▶ Unexplained haematuria
- ▶ History of bladder tumour
- ▶ Blood clotting disorders
- ▶ Ascites
- ▶ Suspicion of ovarian cyst
- ▶ Very obese patients

Reference: Based on ACA notes on good practice 2003 and expert opinion

## Indwelling Catheter Selection

When selecting a catheter it is important to consider duration of use, material type, diameter, length and balloon size to ensure the most appropriate catheter is selected.

### Catheter Diameter and Length

The external diameter of the catheter is measured in Charrière (Ch) otherwise known as French (Fr) gauge. The Ch size is a measure of the **external** diameter of the catheter in millimetres (1 Ch = 1/3mm diameter, 12 Ch = 4mm diameter).

For routine urethral catheterisation it is recommended that a 12, 14, 16 Ch catheter is used for an adult female/male patient. Paediatric use is between size 6 and 10 Ch.

When selecting a catheter for urethral drainage the smallest possible diameter should be used that still allows adequate drainage (Norton 1996) as a large diameter is associated with increased bladder irritability, resulting in painful spasms and leakage (Roe and Brocklehurst, 1987).

- 12–14 Ch for drainage of clear urine
- 14–16 Ch for urine containing debris or particles
- 18 Ch or above if haematuria or clots are present (Pomfret 1996, 2000)

A 12 Ch BARD® Catheter has the capacity to pass 100 litres of urine in 24 hours. On average, urine output is 1.5 litres in 24 hours.

When selecting a catheter for suprapubic drainage, ensure the catheter is licenced for this use. A larger diameter catheter may be used to facilitate better drainage, this may be useful if issues, such as clots and debris have been a problem with a urethral catheter, e.g. 16 Ch (Roe and Brocklehurst, 1987). However, post surgery smaller sizes are frequently adopted to minimise scarring.

## Choosing the Correct Length of Catheter?

Catheters are manufactured in three lengths designed to meet the needs of different patients:

- **Female length catheter**

**20–26cm** (for females only, although obese or chairbound females may require a standard length catheter)

- **Standard length catheter**

**40–45cm** (for male or female patients)

- **Paediatric catheter**

**30–31cm**

The standard length is used in male patients and some female patients but particularly for those confined to bed. The female length is for ambulatory female patients provided they are not obese. The shorter length means a leg bag can be worn and does not show below the skirt. It also avoids kinking of the catheter tube and provides a direct path for urine drainage. If a standard length catheter in a female patient is connected to a leg bag, the surplus length forms a loop where urine could collect and stagnate.

## Silver Alloy-Coated Foley Catheters

The risks of catheter associated urinary tract infection (CAUTI) is of concern to all healthcare professionals. Up to 40% of all healthcare associated infections are CAUTIs (Burke et al 1999), with around 9% of long term catheterised patients experiencing symptomatic infections (Getliffe 2006).

CAUTI is the most common and costly healthcare-associated infection, and possibly the most preventable (Salgado et al, 2003). The Cochrane Review of silver alloy-coated Foley catheters concluded that they are successful at reducing the rate of this healthcare-associated infection, which can potentially be fatal (Brosnahan et al, 2004).

The BARDEX<sup>®</sup> I.C. anti-infection Foley Catheter with BACTI-GUARD<sup>®</sup>\* silver alloy coating and BARD<sup>®</sup> Hydrogel can stay in situ for 28 days. It's unique combination of noble metals and hydrogel coats both the inside and outside surfaces of the catheter, allowing a slow release of silver ions which prevent bacteria bonding to the surface of the catheter. Silver has been used in medicine for thousands of years (Rupp et al, 2004) and there are no toxic side effects.

With its antimicrobial surface, the BARDEX<sup>®</sup> I.C. catheter has been demonstrated to reduce CAUTIs by an average 32–69% (Bologna et al. 1999; Karchmer et al, 2000; Lai and Fontecchio, 2002; Brosnahan et al, 2004) and to significantly reduce costs associated with this type of infection (Plowman et al, 2001).

# Balloons

Balloons retain the catheter in place and generally there are three different sizes of balloon:

- 5mL paediatric balloon
- 10mL balloon for routine drainage
- 30mL or larger balloons specifically for post-operative use (Stewart 1998)

It is vital that the correct volume of sterile water is used as under-inflation can result in balloon distortion, with the risk that the catheter may become dislodged from the bladder. Over inflation leads to occlusion of the drainage eyes (Belfield 1988).

It is recommended that the balloon should only be filled with sterile water (Falkiner 1993). To ensure the correct fluid and appropriate volumes are used pre filled catheters are available (AQUAMATIC<sup>®</sup>), plus catheters which incorporate a syringe of sterile water (AQUAFIL<sup>®</sup>). The following substances should be avoided:



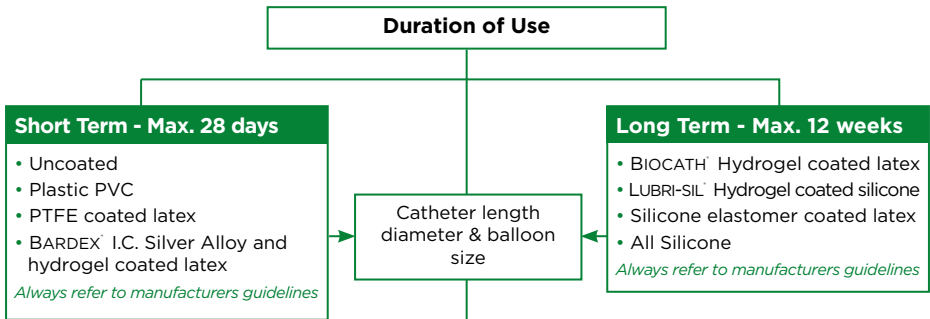
- **Air** - the balloon rises to the surface, so the catheter eye stands above the urine. This may cut off drainage and bring the catheter tip in contact with the bladder wall, causing irritation

- **Tap water** - osmosis can occur due to the difference in density between tap water and urine. This can lead to transfer of bacteria from the water into the bladder. Also, tap water may contain particles which block the inflation channel

- **Saline** - the use of saline can result in crystal formation in the inflation channel, making balloon deflation extremely difficult

The weight of water in larger balloons may lead to dragging of the catheter. The balloon may also rest against the delicate trigone of the bladder causing bladder spasm and discomfort.

# Duration of Use, Size and Selection of Catheter



Route of Catheterisation Urethral <sup>1</sup>									
Catheter Length	Child			Female			Male		
	Urine Composition Clear	Debris	Clots	Urine Composition Clear	Debris	Clots	Urine Composition Clear	Debris	Clots
Female Paediatric Standard Size (Ch)*	✓	✓	✓	✓	✓	✓	✓	✓	✓
6	✓								
8		✓							
10			✓						
12				✓				✓	
14				✓	✓		✓	✓	
16					✓			✓	
18						✓			✓
Balloon Size 5mL	✓	✓	✓						
10mL				✓	✓	✓	✓	✓	✓

Route of Catheterisation Suprapubic						
Catheter Length	Female			Male		
	Urine Composition Clear	Debris	Clots	Urine Composition Clear	Debris	Clots
Female Paediatric Standard Size (Ch)*	✓	✓	✓	✓	✓	✓
6						
8						
10						
12						
14						
16	✓	✓	✓	✓	✓	✓
18		✓	✓	✓	✓	✓
Balloon Size 5mL						
10mL	✓	✓	✓	✓	✓	✓

\*Use largest Ch size to facilitate better drainage. Post-surgically smallest Ch sizes are used to minimise scarring.

**References:**  
 1. Ryan Woolley B 1987 Aids for the management of incontinence, London: Kings Fund.

## Duration of Use

The material from which the catheter is made determines the recommended maximum length of time an individual catheter may remain in the bladder.

Catheters are generally categorised as short-term (maximum 28 days duration) and long-term (maximum 12 weeks duration).

Because urethral catheterisation is an invasive procedure that exerts pressure on the delicate urethral mucosa, the characteristics of the catheter material are highly relevant to choice. The materials used for catheters are polyvinylchloride (PVC or plastic), latex with or without coating and 100% silicone with or without coating.

See tables on short and long term catheter selection for the appropriate material to use.

## Changing Catheters

This varies from patient to patient. Where encrustation is a problem in a particular patient, it is usually possible to estimate the lifespan of a catheter by observing and recording the length of time that the catheter remains functional before becoming blocked. This simple technique allows planned re-catheterisation to take place before blockage develops.

The nurse is professionally accountable for using products according to manufacturers' instructions. It is important that catheters are not left in situ for longer than the recommended time.

Nurses must keep a record of the type of catheter used and date of insertion. In addition, the batch number and expiry date of the catheter should be noted, in case problems arise. BARD<sup>®</sup> Foley catheters have especially designed peel-off labels and client record cards to assist in keeping accurate records, as well as a diary of 'catheter life'. These are available directly from Bard Head Office or from your local representative.

# Selecting Short-Term Catheters

Duration of Use/ Catheter Material	Material Advantages/Disadvantages	
	Advantages	Disadvantages
<p>Plastic/PVC (should not be left in situ longer than seven days). Plastic catheters are often chosen for post-operative use. Maximum time in situ seven days.</p>	<ul style="list-style-type: none"> <li>• Large internal diameter, allows good drainage of clots and debris (Ryan-Woolley 1987)</li> <li>• Post-operative drainage</li> </ul>	<ul style="list-style-type: none"> <li>• Rigid and inflexible</li> <li>• Cause urethral spasm and leakage (Norton 1996), (Ryan-Woolley1987)</li> </ul>
<p>BARDEX<sup>®</sup> I.C. Foley Catheter with BACTI-GUARD<sup>®</sup> * Silver Alloy coating, and BARD<sup>®</sup> Hydrogel. Maximum time in situ 28 days.</p>	<ul style="list-style-type: none"> <li>• Inhibits bacterial growth</li> <li>• Reduces incidence of urinary tract infections within acute care settings (Saint 1998)</li> <li>• Biocompatible and low surface friction improves patient comfort and reduces irritation (Pratt et al, 2001)</li> <li>• Cost effective - (Karchmer 2000)</li> </ul>	<ul style="list-style-type: none"> <li>• Unsuitable for patients who are allergic to latex</li> </ul>
<p>PTFE coated latex PTFE AQUAMATIC<sup>®</sup> BARDIA<sup>®</sup> PTFE AQUAMATIC<sup>®</sup> and AQUAFIL<sup>®</sup> Maximum time in situ 28 days.</p>	<ul style="list-style-type: none"> <li>• PTFE is inert</li> <li>• Smooth outer surface makes it more resistant to encrustation and urethritis (Edwards et al, 1983), (Seth 1988)</li> <li>• Coating reduces tissue damage (Ryan-Woolley 1987)</li> </ul>	<ul style="list-style-type: none"> <li>• Unsuitable for patients who are allergic to latex</li> </ul>

\* All BARD<sup>®</sup> Latex Base Foley Catheters have a permanently bonded coating.



# Selecting Long-Term Catheters

Duration of Use/ Catheter Material	Material Advantages/Disadvantages	
Long-Term Max 12 weeks duration	Advantages	Disadvantages
<p>Hydrogel coated latex</p> <p>BIOCATH<sup>®</sup>, BIOCATH<sup>®</sup>, AQUAMATIC<sup>®</sup> and AQUAFIL<sup>®</sup></p> <p>Hydrogels are polymers that absorb water to produce a slippery surface which reduces trauma on insertion</p>	<ul style="list-style-type: none"> <li>• Biocompatible</li> <li>• Low surface friction improves patient comfort and reduces irritation</li> <li>• Resistant to bacterial adherence and encrustation (Seth 1988), (Cox et al, 1988), (Talija et al, 1990), (Roberts et al, 1993), (Bull et al, 1991)</li> <li>• May remain insitu longer than silicone elastomer coated catheters (Getliffe 1993), (Bull et al 1991)</li> <li>• The first choice for long term urethral and suprapubic use should be hydrogel coated latex whenever possible (Parkin 2002)</li> </ul>	<ul style="list-style-type: none"> <li>• High surface friction increases urethral trauma/stricture formation (Woodward 1997), (Ruutu et al 1985), (Edwards et al, 1983)</li> <li>• Silicone treatment not permanently bonded to the latex catheter so dissolves on insertion</li> <li>• Uncoated latex absorbs fluids and swells reducing internal diameter and increasing external diameter (Ryan Woolley 1987)</li> <li>• Unsuitable for patients who are allergic to latex</li> </ul>
<p>Hydrogel coated silicone</p> <p>LUBRI-SIL<sup>®</sup>, LUBRI-SIL<sup>®</sup> AQUAFIL<sup>®</sup></p>	<ul style="list-style-type: none"> <li>• Inert material suitable for patients with latex allergy</li> <li>• Reduced irritation</li> <li>• Thin walled catheter with a larger lumen than coated catheters</li> <li>• Hydrogel coating enhances patient comfort and may increase resistance to blockage</li> </ul>	<ul style="list-style-type: none"> <li>• Crescent-shaped lumen may predispose to internal encrustation (Pomfret 2000)</li> <li>• Rigid and uncomfortable, particularly for females (Ryan Woolley 1987)</li> <li>• Silicone is semi-permeable, which may lead to deflation of the balloon and premature failure of the catheter (Stewart 1998), (Barnes and Malone Lee 1989), (Getliffe 1993)</li> <li>• Formation of a 'cuff' on deflation of the balloon of all silicone catheters causes difficulty in removal (Parkin 2002)</li> </ul>

Duration of Use/ Catheter Material	Material Advantages/Disadvantages	
Long-Term Max 12 weeks duration	Advantages	Disadvantages
Silicone elastomer coated latex	<ul style="list-style-type: none"> <li>• Smooth internal and external surfaces resistant to encrustation (Ryan Woolley 1987)</li> <li>• Coating reduces water absorbency, chemical leaching, irritation and tissue damage (Ryan Woolley 1987)</li> </ul>	<ul style="list-style-type: none"> <li>• The hydrogel coated Foley catheter has been shown to be preferable to the Silicone Elastomer coated Foley catheter in the management of long-term catheterised patients in the community (Bull et al, 1991)</li> <li>• Unsuitable for patients who are allergic to latex</li> </ul>
All Silicone BARDIA <sup>®</sup> , AQUAFIL <sup>®</sup> Bard All Silicone	<ul style="list-style-type: none"> <li>• Inert material suitable for patients with latex allergy</li> <li>• Reduced irritation</li> <li>• Thin walled catheter with a larger lumen than coated catheters</li> </ul>	<ul style="list-style-type: none"> <li>• Crescent-shaped lumen may predispose to internal encrustation (Pomfret 2000)</li> <li>• Rigid and uncomfortable, particularly for females (Ryan Woolley 1987)</li> <li>• Silicone is semi-permeable, which may lead to deflation of the balloon (Stewart 1998), (Barnes and Malone-Lee 1989), (Getliffe 1993)</li> <li>• Formation of a 'cuff' on deflation of the balloon of all silicone catheters causes difficulty in removal (Parkin 2002)</li> </ul>

## Intermittent Self Catheterisation (ISC)

Many people need intermittent catheterisation at some stage of their lives.

It may be that the bladder muscle has lost the ability to contract enough to completely empty the bladder. Alternatively, the patient may need an intermittent catheter (ISC) because of the result of an operation, a health condition he or she was born with or have back or spinal problems.

Intermittent catheterisation is, therefore, a technique which helps people who cannot control or have difficulties emptying their bladder to get on with their lives.

Many types of intermittent catheter are available to the patient including the HYDROSIL® Gripper Male Hydrophilic Intermittent Catheter and HYDROSIL® Rose Female Hydrophilic Intermittent Catheter. Both are made from a unique hydrophilic silicone that is soft and flexible yet sufficiently firm and resilient. This makes it the ideal material for a comfortable 'friction- free' catheterisation.

## Urethral Strictures

Urethral strictures (when the urethra or tube leading from the bladder narrows, resulting in slowing down of the flow of urine) are a common condition after surgery or infection, especially in men. Urethral strictures are treated by urethral dilation firstly, then with a simple operation called an 'urethrotomy' to widen the opening of the urethra if the stricture reoccurs. Intermittent catheters are then used to keep the strictures open (known as dilation) and prevent the need for further operations.



## The Use of Catheter Gels

The National Institute for Health and Clinical Excellence (NICE) guidelines on infection control (2003) and the epic<sup>2</sup> guidelines (2007) both support the use of a single-use lubricant or anaesthetic gel before all urethral catheterisations.

The bulky nature of the gel is proven to help pre-form and dilate the urethra, thus minimising the risk of trauma, facilitating insertion, reducing infection and discomfort (Booth F 2009; Kyle G 2009).

The female urethra is shorter than the male urethra and because of this, it was thought that using a gel was unnecessary. However unlike the male urethra, the female form is a flattened convoluted tube shape with epithelial folds that lie flat and ribbon-like, making it prone to trauma and therefore more recently, using urethral gels are recommended when catheterising both men and women (de Courcey-Ireland 1993).

## STATLOCK<sup>®</sup> Foley Stabilisation Device

The STATLOCK<sup>®</sup> Foley is a new strap free device which locks the Foley catheter in place, stabilising it and eliminating any chance of a sudden pull.

In both men and women, traction on the catheter can cause damage; for men, it may be visible as a penile cleavage (Billington et al. 2008). In women, the bladder neck and the proximal urethra could be broken down due to necrosis (Vaidyanathan et al, 2005). Externally the labia may be painfully traumatised (Billington et al. 2008).

The latex free STATLOCK<sup>®</sup> Foley is a hypoallergenic, breathable, waterproof securement pad with a 360° swivel retainer clip which allows the catheter to move with the patient.

Designed for comfort and safety, it can be worn for up to seven days to co-incide with leg bag changes, to:-

- Reduce the risk of pulling on the Foley catheter, which can cause pain and trauma
- Provide a comfortable, secure and hygienic placement of a catheter away from areas of the body that could lead to bacteria contaminating the surface of the catheter
- Remove the need to wear an elasticated strap around your thigh which can slip or restrict blood flow

## BARD® Tray Foley Catheterisation Tray

The “all in one” catheterisation kit which contains everything required to either catheterise or re-catheterise, in one handy pack.

- Encourages best practice
- Cost effective<sup>1</sup>
- Provides a sterile environment
- Reduces risk of infection - a true closed system<sup>2</sup>
- Instant protection for the clinician and the patient
- Better for the patient - everything required in one place
- Less waste



## Collection Management and Drainage Systems

The choice of the drainage system is dictated by the reason for catheterisation, the intended duration, patient mobility and patient choice. Where possible the system should be easily managed by the patient/carer.

## Catheter Valves

Catheter valves have been in use for many years. They are an increasingly popular alternative to the cumbersome and sometimes unsightly drainage bag and are now available from several manufacturers. FLIP-FLO<sup>®</sup> catheter valves are easy to use and offer patients discretion, comfort, independence and management of their own drainage system. Patients will need to be aware of their own bladder and have some dexterity. Catheter valves assist in maintaining healthy bladders and due to the flushing action may reduce the risk of catheter encrustation (Addison & Rigby 1998), (Bard 1998), (Doherty 1999), (Addison 1999a).

The FLIP-FLO<sup>®</sup> catheter valve is connected to the catheter outlet and allows the patient to drain the bladder when it is convenient thereby ensuring a closed system is maintained. A FLIP-FLO<sup>®</sup> catheter valve can be used if the patient has a reasonable bladder capacity. The design of valve chosen should be one the patient can open and close easily.

The following should be considered when selecting a catheter valve:

- Patient assessment
- Cognitive function - to ensure patients' understanding of their bladder's function
- Manual dexterity or carer involvement
- Bladder sensation (to prevent bladder distension and reflux of urine back to kidneys or timed regime)
- Mobility
- Bladder capacity - to ensure the catheter valve is opened at the most appropriate time
- Patient preference - patients must be made aware of catheter valves

## Drainage Bags

**Closed System** - where the catheter and drainage bag are continuous and remains connected for 5-7 days (Drug Tariff 2010). The drainage bag will have an outlet tap. By using a closed system, the risk of symptomatic infection is reduced from 97 to 8-15 per cent (Pratt et al 2001).

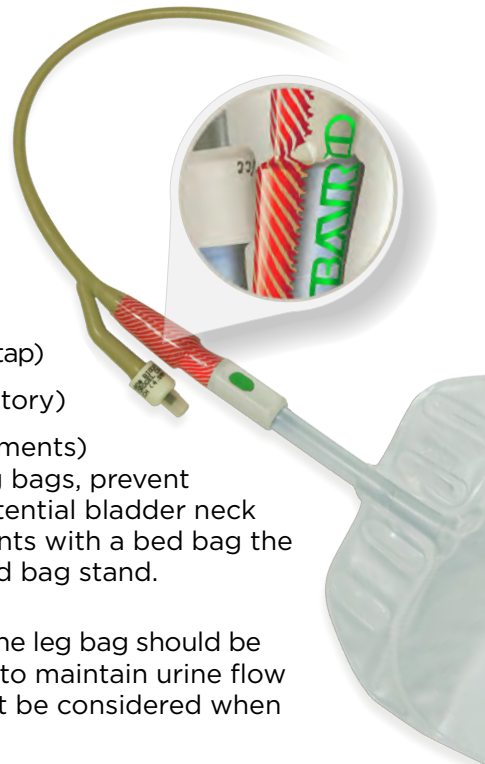
**Link System** - where a leg bag is connected to a catheter for 5-7 days, (DoH Drug Tariff 2010) for nighttime drainage, a bed bag is linked to the outlet tap of the leg bag. The bed bag is then discarded daily. Please check local policy.

**Drainage Bags** - can be body worn or free standing and the following should be considered when a drainage bag is selected to ensure the best collection system is provided along with comfort and manageability:

- Patient choice
- Bag capacity (a wide range are available)
- Fabric or non-fabric backed
- Tubing length (a wide range are available)
- Tap design
- Placement (leg/sporran)
- Manual dexterity (ability to manage tap)
- Mobility (ambulatory/non-ambulatory)
- Fixation aids (abdominal, leg, garments) should be used to support the leg bags, prevent dragging, urethral trauma and potential bladder neck damage. In non-ambulatory patients with a bed bag the bag should be supported by a bed bag stand.

Ambulant patients may prefer a leg bag. The leg bag should be positioned below the level of the bladder to maintain urine flow (Dieckhaus and Garibaldi 1998). This must be considered when selecting tube lengths.

Patients who are less ambulant may use a drainable bed bag directly connected to the catheter with the bed bag being supported by a stand or hanger and emptied from the outlet tap.



Bard produce the URIPLAN<sup>®</sup> and BARDIA<sup>®</sup> range of leg and bed drainage bags for both the community and acute care settings together with a full choice of accessories. These include the following:

- BARDIA<sup>®</sup>, Hospital leg and bed bags
- URIPLAN<sup>®</sup>, Community leg and bed bags
- URISLEEVE<sup>®</sup>, Leg bag holder
- URILOCK<sup>®</sup>, Tap lock device
- COMFASURE<sup>®</sup>, Catheter retainer strap
- STATLOCK<sup>®</sup>, Catheter stabilisation device
- URISTAND<sup>®</sup>, Flat packed stand for 2 litre bed bags
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It is important that the highest standards of hygiene are maintained. Glenister proved that nurses' hands become contaminated while emptying urine drainage bags and that inadequate hand washing can lead to cross infection. It is therefore recommended that strict hand washing before and after emptying drainage bags is implemented. The wearing of gloves is preferable and they should be changed between patients.

## Catheter Management

What everyday advice should I give patients?

Patients should be given the following advice:

- Patients should always wash their hands before and after any procedure
- Carers should always wash their hands and wear non sterile gloves when emptying or changing the drainage bag
- Men should ensure they wash under the foreskin
- Drinking plenty of mixed fluids may help to flush the catheter and help the catheter to drain
- Consider individuals medication i.e. Diuretics, Warfarin.
- Avoid constipation
- Do not kink or clamp the catheter tubing
- Always attach the catheter to the chosen drainage bag or catheter valve
- Empty the drainage system regularly
- Keep a closed system of drainage

How do I advise patients about sex?

Intercourse is usually possible for both men and women with a urethral catheter. For women the catheter should be taped out of the way along the abdomen. Men can tape the catheter along the penis and apply a condom, although it may be more comfortable to remove the catheter prior to intercourse and replace it with a new catheter afterwards. It is important that the patient is taught how to do this correctly. The drainage bag should be emptied before sexual activity.

A suprapubic catheter may make sexual intercourse easier.

## When Should I Tell the Patient to Phone for Help?

This will depend on the patient, but usually help should be sought if any of the following occurs:

- The catheter blocks
- There is no urine in the bag after 2–3 hours
- The catheter falls out
- Urine keeps leaking from around the catheter
- Urine is cloudy, smelly or feels as if it is burning and this does not improve after drinking more fluids
- The patient has acute lower abdominal pain
- The urine is suddenly blood stained or discoloured

## Does a Suprapubic Catheter Need Special Care?

The usual advice for caring for any catheter applies, but the patient should be encouraged to wash around the insertion site with cooled boiled water at least twice a day. To reduce the likelihood of trauma, some patients may be able to use a catheter valve rather than a drainage bag.

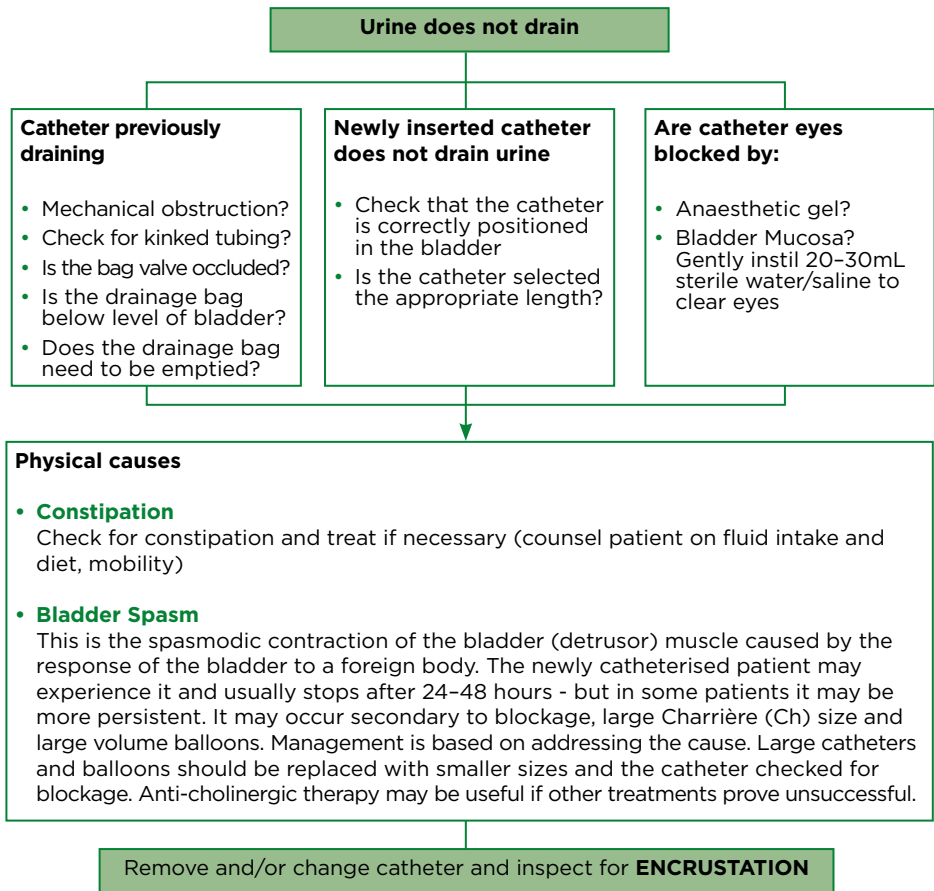
A dry gauze dressing should be applied to the catheter insertion site 24–48 hours after the initial insertion. No further dressing is required unless the insertion site is moist and exuding, although patient preference should be taken into consideration. For special care requirements contact the local tissue viability nurse.

The patient should be reminded to keep a spare catheter at home in case of emergency!

# Common Problems

## Urine does not drain

This may happen for a number of reasons. Simple mechanical causes such as kinking of drainage tubing and equipment should be ruled out first. Physical causes such as constipation and bladder spasm are also a common cause along with catheter encrustation.



## Investigating Encrustation

Once the simple causes have been ruled out it is important to thoroughly examine the blocked catheter once it has been removed.

Examination of the catheter may reveal deposits within the catheter lumen, on the outer surfaces of the tip or on the balloon, where it is in contact with urine. These deposits on the outer surface of the catheter can cause pain and trauma when the catheter is removed.

If the catheter is rolled between the forefinger and thumb the catheter may feel gritty. If a horizontal cross section of the catheter is cut length ways up the catheter, encrustation can be seen.

## Cause of Encrustation

Kohler-Ockmore (1991) described the many studies that have explained the development of encrustation in catheterised patients:

- Normal urine is sterile with a pH of 6–7
- The patient, for whatever reason is catheterised
- Bacteria, especially *Proteus* sp and *E.Coli* enter the drainage system. These micro-organisms have a strong tendency to grow on available surfaces in preference to free-living in a surrounding aqueous environment such as urine
- Initially only one cell thick, a biofilm thickens as the bacteria multiplies and adheres to the catheter surface. These bacteria secrete the enzyme “Urease”, which breaks down urea, with the release of ammonia. This raises the pH producing strong alkaline urine. This alkalinity facilitates the precipitation of calcium phosphate and ammonium magnesium phosphate crystals, more commonly known as ‘Struvite’ (Flack 1993)

# Managing Encrustation Care Strategies

Once the cause and severity of blockage due to encrustation has been established then a treatment regime can be planned. The catheter record card will give an indication of when the catheter is likely to block allowing the carer to either plan a catheter change prior to the next blockage or introduce a catheter maintenance regime using catheter maintenance solutions.



Patients can be classed broadly as “blockers” or “non-blockers” (Getliffe 1994a). Blockers are identified as patients who consistently and repeatedly develop extensive encrustation within a few days to a few weeks, resulting in a shorter catheter life because of diminished flow and leakage.

## Catheter Maintenance Solutions

A regular regime using catheter maintenance solutions such as OPTIFLO<sup>®</sup> may be considered to maintain the patency of the catheter. Recent studies have shown that an instillation of 50mL Suby G is as effective as 100mL at reducing encrustations. In a concurrent experiment it was shown that two sequential instillations of 50mL Suby G were more effective than a single instillation with either 50 or 100mL Suby G (Getliffe 2000). A range of prepacked, sterile solutions are available.

- **Saline 0.9%** - is used for the removal of small blood clots and debris following surgery. It is not effective against encrustation (Getliffe 2000)
- **Citric Acid 3.23%** - Suby G works by dissolving the crystals formed by urease producing bacteria. Suby G contains magnesium oxide, this has been incorporated to minimise bladder irritation due to the acidic nature of the solution (ACA 2003)
- **Citric Acid 6%** - solution R is effective at dissolving severe encrustation due to its acidic nature. It can also be used prior to catheter removal if it is thought that external encrustation on the catheter tip and balloon is present potentially causing pain and tissue trauma when the catheter is withdrawn (ACA 2003)

It is sensible to start with an instillation once or twice a week and to adapt the regime on the basis of its effectiveness for the patient. It may be more effective to administer two sequential solutions once a week than one solution twice (Getliffe 2000). This has the added benefit of reducing the number of times the closed system is opened.

## Haematuria

Small blood-stained particles seen as debris in the inlet tube or drainage bag are a common occurrence in most urinary drainage systems and may be the result of infection or trauma. Increasing fluid intake may help to 'flush' this through the system. Observation of persistent or sudden haematuria should be pointed out to medical personnel.

Certain foods, drinks and medications can significantly alter the colour of urine in the drainage bag. These colours range from blue, if the patient has been prescribed amitriptyline to dark red if they have consumed beetroot or blackcurrant juice (Ford 1992). Confirmation of microscopic blood may be obtained by dipstick testing the urine.

## Urine is Bypassing

This is the leakage of urine from the space between the urethral wall and the outer surface of the catheter. It may be caused by too large a Charrière (Ch) size or balloon size, 'kinking' of the catheter and inlet tubing, bladder spasm or catheter blockage.

Management involves treatment of the underlying cause - smaller catheter and balloon size and choice of catheter material.

### Reasons for Bypassing

#### Bladder spasm/irritation:

- Consider anticholinergic/antimucarrinic medication, systemic or intravesicle
- Consider smaller Charrière size
- Consider catheter material, irritation
- Avoid use of 30mL balloon sizes, a 10mL is suitable for most adult catheterisation
- Increase fluid intake to avoid constipation

## Non-Deflating Balloon

If the catheter balloon fails to deflate (which is rare):

### **Non-Deflating Balloon**

- Remove the syringe and try a different one
- Leave the syringe attached for 15–20 minutes
- Check if the patient has a kinked catheter or is constipated. The pressure this causes on the urethra can block the catheter and the inflation channel, preventing deflation
- The pressure of debris, encrustation or foreign material can prevent deflation. The catheter can be ‘milked’ along its length by rolling it between thumb and finger to unblock it or remove any obstruction
- Do not attempt to burst the balloon by over-inflating it. If a balloon should burst, cystoscopy may be required to remove balloon fragments
- Gently instil 1–2mL sterile water via valve in case of particulate blockage and check valve
- Use a needle and syringe to aspirate the inflation arm just above the valve
- Do not cut the catheter during removal. The inflation funnel should remain attached. Cutting the catheter shaft above the bifurcation point can create problems and shortening the length of the catheter makes removal difficult and takes it close to the external urethral opening



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