

Urinary catheters made easy

This guide is aimed at all staff working in a GP practice who would like to increase their understanding of urinary catheters to help inform prescribing decisions.

What is a urinary catheter?

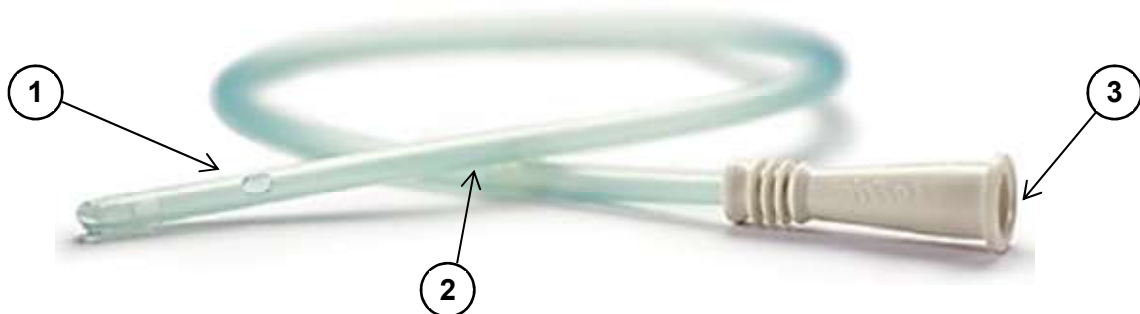
A urinary catheter is a hollow tube that is inserted into the bladder to drain urine from it. A person will use a catheter if they have urinary retention, that is, they cannot pass urine in the normal way. The catheter can either be inserted into the urethra to reach the bladder or inserted into a small hole in the lower abdomen to reach the bladder. Catheters can be made from silicone, polyurethane, polyvinyl chloride (PVC) or latex.

Types of catheters

There are two types of catheters:

- **Intermittent catheters** – these are **single use only** so a fresh catheter is inserted and used each time the person urinates. These are often referred to as a 'Nelaton' or 'ISC' catheter (ISC stands for 'intermittent self-catheterisation'. The patient inserts these themselves, so they need to have good dexterity and cognition).
- **Indwelling catheters** – these remain in situ in the bladder for a longer period of time with the aid of a balloon and are replaced at set intervals (usually at one to three-monthly intervals). These are often referred to as 'Foley' catheters.

Components of an intermittent catheter



1. Eyelet

This is a small hole (sometimes called 'eyes') at the top of the catheter. Urine in the bladder enters this hole and passes down the drainage tube and out of the funnel at the bottom.

2. Drainage tube

Urine flows down this tube on its way to exiting the catheter.

3. Funnel

This is the opening where urine exits the catheter. Sometimes they are referred to as 'connectors' because they can potentially connect to another device like a urine drainage bag or urinal. Sometimes these funnels have a guide around them which can be moved up and down the drainage tube so that the person does not need to touch the drainage tube at all.

A range of compact intermittent catheters are also available, such as Speedicath[®]. These are more discreet and portable and are on our local prescribing formulary.

Because an intermittent catheter is for **single use only**, it is discarded immediately after use.

Components of an indwelling catheter

1. Eyelet

This is a small hole at the top of the catheter. Urine in the bladder enters this hole and passes down the catheter and out of the urine drainage port at the bottom.

2. Balloon

Once the catheter is correctly in place in the bladder the balloon is then inflated to hold it in place. The balloon is deflated before the catheter is removed from the bladder.

3. Catheter

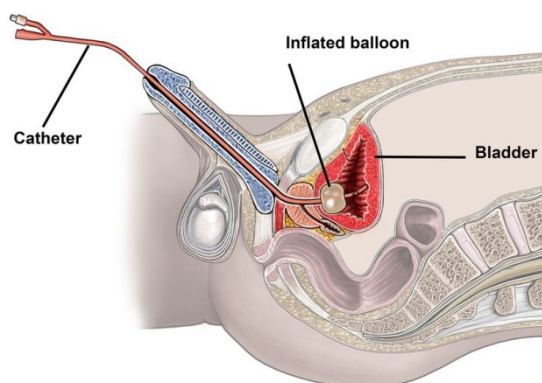
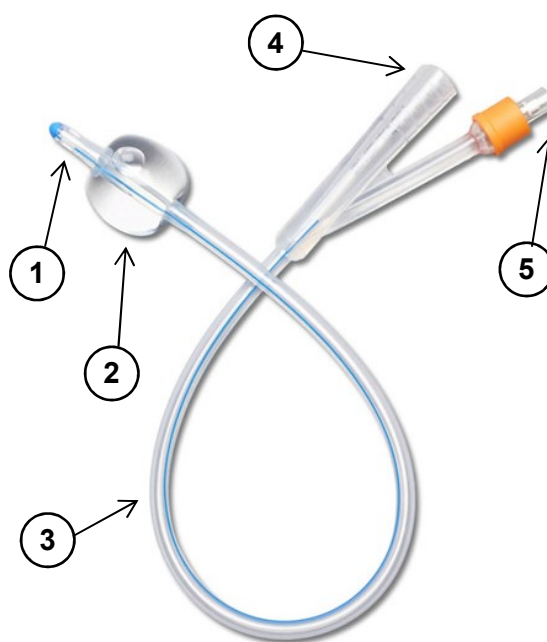
The catheter itself contains an inner tube called a 'lumen' which allows urine to run down and exit the catheter. It also contains a tube which is used to pass balloon inflation liquid up to the balloon and then back down again when the balloon needs emptying.

4. Urine drainage port

Urine exits the catheter via this port and either runs into a drainage bag or is prevented from escaping by a catheter valve that is attached to the port.

5. Balloon port

The balloon is inflated by inserting a pre-filled syringe containing a catheter inflation liquid into this port. An empty syringe is inserted into this port to remove the catheter inflation liquid when the balloon needs deflating.



Side profile of an indwelling catheter in the bladder, via the urethra

2-way and 3-way catheters

The number of 'ways' an indwelling catheter has is essentially the number of connection ports that it has at the bottom. On a 2-way catheter as above, there is a port where the urine exits and a port where the balloon inflation liquid is inserted. A 3-way catheter already has the two ports previously mentioned, but also has a third port which is used solely for washing out ('irrigating') the catheter or bladder with a catheter maintenance solution. 3-way catheters are used in hospitals.



A 3-way indwelling catheter

Catheter Lengths

Catheters are made in three different lengths:

- **Male/Unisex length:** usually 40–45cm in length
- **Female length:** usually 7–26cm in length
- **Paediatric length:** usually 30–31cm in length

Women and children generally use shorter lengths because of their shorter urethras. Men can only use male/unisex length catheters though because these are manufactured longer to work around the male anatomy. It is important to remember that a female **can** use a male catheter, but a male should **never** be prescribed a female catheter.

Catheter widths

Catheters come in different widths and this is called the 'Charrière' gauge (Ch). One Charrière is equivalent to 1/3 mm. The gauge is an even number between 6 and 26 (the higher the number, the larger the width):

- **Male/Unisex** catheters: 8 to 26Ch
- **Female** catheters: 6 to 24Ch
- **Paediatric** catheters: 6 to 10Ch

Catheter tips

Catheters can have different tips on the end of them to make insertion into the urethra easier in different patients:

- **Standard/cylindrical:** a standard rounded tip.
- **Nelaton:** a standard rounded tip on a Nelaton catheter.
- **Ergothan:** a flexible conical shaped tip which adjusts to the anatomy of the urethra and glides more easily and comfortably into the bladder.
- **Coude:** this has a slight bend or angle to the tip that allows the catheter to move around obstructions such as an enlarged prostate or scar tissue to aid easier insertion.
- **Tapered:** this is the standard type of coude tip. It becomes narrower at the insertion point of the catheter to make it is easier to insert into the urethra and navigate through tight strictures (see Glossary).
- **Olive:** this is another type of coude tip which has a rounded or ball-shaped tip with a slight curve. It allows for easy and comfortable insertion by providing a smooth passage around obstructions in the bladder.
- **Tiemann:** this is a bent tip that is longer, thinner, and more flexible than a standard coude tip. It is used to help find even very small openings through the urethra into the bladder.
- **Soft:** a round ended tip that is softer and more flexible to aid easier insertion.
- **Open:** this has two eyelets at the top of the catheter and the tip itself also has a hole in which allows urine to run down the catheter tubing. It is designed to improve urine drainage.



Catheter coatings

Some catheters have a special coating on them, for example:

- **Silver/silver alloy coating:** silver has been shown to have antibacterial properties. Catheters with a silver coating may reduce the risk of catheter-associated urinary tract infections (UTIs). These are usually used in hospitals with a wear time of about six weeks.
- **100% pure silicone or hydrogel coating:** these reduce urethral irritation during insertion and wear and have a wear time of up to 12 weeks.
- **Polytetrafluoroethylene (PTFE) or silicone coating:** these are used to coat latex catheters, to reduce the chance of allergies to the latex and to reduce friction during insertion. These coatings can become damaged or worn over time though, which explains why some coated latex catheters have a reduced wear time of four weeks.

Lubricants

To make the process easier and more comfortable, the urethra needs to be lubricated before a catheter can be inserted into it. There are three options for lubrication:

Use a pre-lubricated catheter: when you open the pack, the catheter feels slippery because it has been pre-lubricated by the manufacturer with a sterile gel. Only intermittent catheters come pre-lubricated.

Use a hydrophilic catheter: these catheters are made of a hydrophilic material that becomes slippery when in contact with water. The catheter package contains a sachet of sterile water which is burst by squeezing the package. The package is then shaken to distribute the water around the catheter. Only intermittent catheters are manufactured in this style.



Hydrophilic catheter packaged with built-in water sachet

Use a dry catheter and a separate sterile lubricant: these catheters are dry to the touch so patients need to be prescribed a separate lubricant on prescription. The lubricant is squeezed into the urethra by hand using aseptic technique. Some lubricants are just a plain watery gel, but some also contain active ingredients such as a lidocaine (a local anaesthetic) and/or chlorhexidine (an anti-microbial). Some patients have sensitivities to these ingredients so caution is needed when prescribing. These lubricants are packed in 6ml size for females and 11ml or 12ml size for males (because the catheter has further to go anatomically to reach the bladder in males). Nursing homes are advised to only order the 11ml or 12ml size for all residents to prevent the inappropriate use of 6ml in males. All indwelling catheters and some intermittent catheters are manufactured dry.



Hydro-caine Gel lubricant 6ml & 11ml

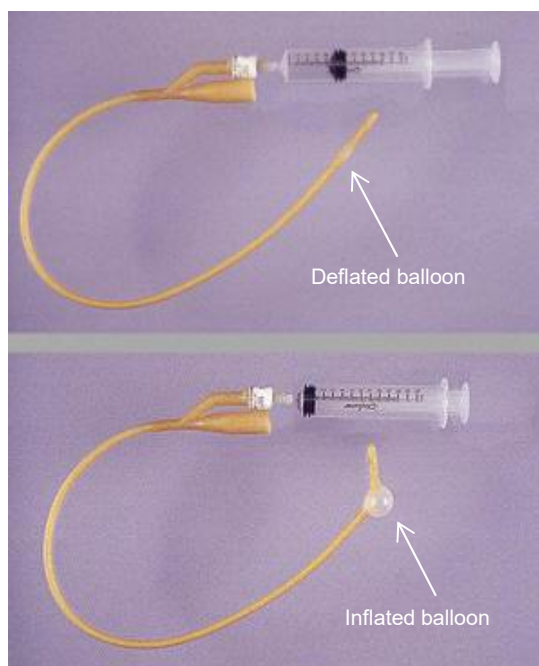
Inflating and deflating the balloon on an indwelling catheter

The balloon is inflated using a sterile liquid such as water, glycerine solution or a product called 'Farco-Fill[®]'. The liquid is inserted into the balloon port via a pre-filled syringe of the chosen liquid. The vast majority of balloons are filled with 5ml of liquid for children and 10ml for adults, although some patients may require 30ml under the guidance of a urology specialist.

This liquid adds weight to the balloon and helps to lock it in place at the base of the bladder, ensuring that no urine can leak out and that the catheter cannot fall out. Air is never used to inflate the balloon because air rises. When it is time to remove and replace the catheter, the contents of the balloon is removed by inserting a sterile empty syringe into the balloon port and allow the inflation liquid to flow back down into the syringe. Once the syringe has been filled the catheter can then be removed from the bladder.



A syringe of Farco-Fill[®] catheter balloon inflation solution



Fixing an indwelling catheter in place

An indwelling catheter needs to be fixed to the body otherwise the weight of any leg bag attached to the other end of it will pull the catheter downwards on the bladder. There are two methods of fixing an indwelling catheter in place:

Catheter retainer straps: these are Velcro straps that go around the leg to fix the catheter tubing to the thigh. They have a mini strap at the front which wraps around the catheter to lock it in place. Examples of this include:

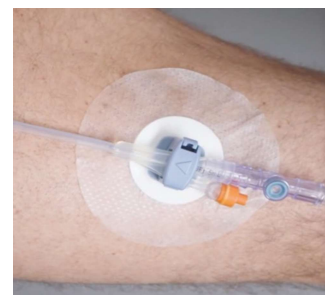
- Great Bear Fix-it Strap[®]
- Prosys Catheter Retaining Strap[®]
- Simpla G-Strap[®]
- UGO Fix catheter straps[®]



A catheter retainer strap

Catheter clips: these are adhesive stickers that fix the catheter tubing to the body. They have a clip at the front which holds the catheter tubing in place. Examples of this include:

- StatLock[®] Foley Catheter Stabilisation Device
- UGO Fix Gentle[®]
- Multi Fix Gentle[®]



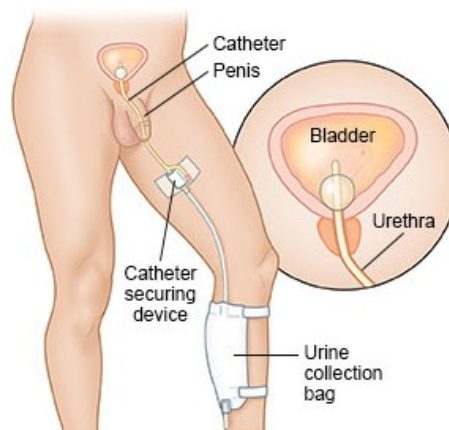
A catheter clip

What does a catheter drain into?

Once urine has entered the eyelet of the catheter and run down the catheter tubing, it will run out of the bottom end of the catheter. This end needs to be secured to something to stop the urine running down the leg. One option is to connect a **leg bag** to the end of the catheter to collect the urine. Another option is to connect a **catheter valve** to the end of the catheter (commonly referred to as a 'Flip-flo'). A catheter valve is basically like a tap that can be turned on or off to either block the flow of urine or allow it to pass through. The benefits of using a catheter valve are that it allows the bladder to fill up with urine, helping it to retain bladder tone. It also means that the patient doesn't have to carry a leg bag on their leg.



A catheter valve fixed to the end of an indwelling catheter

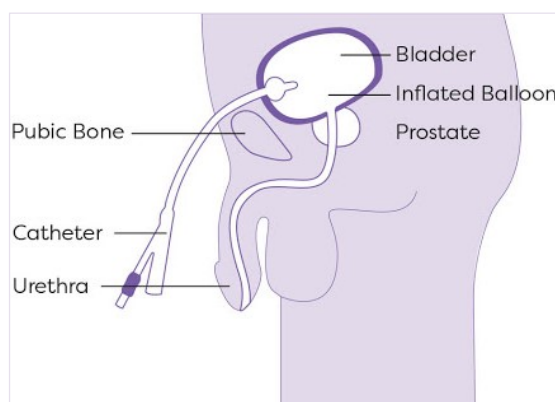


A leg bag connected to an indwelling catheter

Suprapubic catheters

A suprapubic catheter is one that is inserted into the bladder via a small hole above the pubic bone. You can use both an indwelling and an intermittent catheter via this route. The suprapubic option may be chosen for the following reasons:

- If urethral trauma (damage to the urethra) has previously occurred or to prevent future urethral damage.
- The person may have had gynaecological surgery e.g. surgery for prolapsed uterus (see Glossary) or bladder, or for stress incontinence.
- Some wheelchair users or people who can't self-catheterise find this method simpler to manage.
- Some people cannot have or do not want a urethral catheter e.g. if they are sexually active.
- Bladder spasms (see Glossary) occur less often when a suprapubic catheter is used compared to a urethral catheter.
- They are less likely to give someone a UTI infection compared to a urethral catheter.



Location of entry of a suprapubic catheter

How long should a catheter be used for?

Catheter type	Length of use
Intermittent (Nelaton/ISC)	Single use only – insert to urinate then discard straight after use
Indwelling (Foley) Short-medium term	One to four weeks
Indwelling (Foley) Long term	Up to three months

Catheter maintenance solutions (irrigation)

From time to time an indwelling catheter may become blocked due to a build-up of salt, minerals, blood clots or kidney stones. This means that urine cannot drain from it and a medical emergency arises. The catheter then needs to be flushed through with a catheter maintenance solution containing saline to clear the blockage. The solution is inserted into the urine drainage or irrigation port of the catheter and is allowed to flow up the catheter tubing and into the bladder. Catheter maintenance solutions are only to be used **short term** to clear blockages – they are not for routine use. If a patient's catheter is regularly blocking, they should be referred to a specialist continence nurse for review as they may benefit from a different type of catheter.

If a patient's indwelling catheter blocks frequently you may receive a high number of prescription requests for catheters for this patient. Sometimes nursing homes will just insert a new catheter rather than unblock the existing one, which is a very expensive way to resolve the problem and potentially introduces new germs into the bladder; putting the patient at risk of developing a UTI. This can be avoided by scrutinising prescription requests for indwelling catheters to ensure the quantity requested does not exceed that recommended in our prescribing guidelines. If it does, considering referring the patient to a specialist continence nurse.

Catheter maintenance solutions can also be used for other reasons. Mineral deposits can build up in alkaline urine, so to prevent this happening patients are sometimes prescribed a catheter maintenance solution containing citric acid to help neutralise the pH of the urine. They can also be used to clean out the bladder if the patient routinely has a lot of debris in their bladder, for example, if they have had bladder reconstruction surgery. In this latter situation, it is appropriate to prescribe them routinely.

Catheter tray packs

A catheter tray pack is a box that contains all of the items a person might need to insert an indwelling catheter in one container. A tray pack will commonly contain:

- A disposable tray to place items on
- An indwelling catheter
- A catheter clip
- A sterile water syringe for inflating the balloon
- A sterile empty syringe for deflating the balloon on the existing catheter
- An apron
- A pair of gloves
- Swabs
- Sterile wipes
- A leg bag



Example contents of a catheter tray pack

They are very expensive compared to prescribing the individual items separately and are **non-formulary** across BNSSG. The accessory items such as gloves, aprons and swabs should already be kept in stock in nursing homes anyway as part of their standard care provision. The only time catheter tray packs may be prescribed is if you receive an urgent request for one by a district nurse. On occasion, a district nurse will be asked to change a catheter for a domiciliary patient as an emergency and might not know in advance what accessory items the patient has in stock already. For this reason, in primary care they are reserved for use by a district nurse only.

Which brands of catheter and catheter accessories should be prescribed?

Our local BNSSG Urology Products Formulary lists the formulary options, along with the appropriate prescribing quantities:

<https://remedy.bnssgccg.nhs.uk/formulary-adult/local-guidelines/7-genito-urinary-system-guidelines/>

Glossary of terms

Bladder spasms	Involuntary contractions of the bladder muscle that generate an urge to urinate, sometimes accompanied by extreme pain and urine leakage.
Irrigating (bladder/catheter)	A process to clear clots and debris from catheter tubing or to flush blood from the bladder following a medical procedure.
Prolapsed uterus	Where the uterus sags or slips down from its normal position and into the vagina.
Strictures (urethral)	A narrowing of the urethra caused by injury, infection or inflammation of the urethra.