

# Female catheterisation workbook 2014

Name .....

Job Role....

Department .....

Course Date.....



*Our Values*  
**Service Teamwork Ambition Respect**

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# Learning made easy....

## Step 1

- Read the workbook and complete the pre-course assessment on training tracker (TT).
- When the TT assessment has been completed, print off your certificate and bring to the session.
- Failure to attend with your certificate will mean that you will be unable to complete the study day and will need to re-book.

## Step 2 - Support from your manager/mentor

- Ensure that your manager/mentor would like you to learn and practice this/these skill(s)
- It is hoped that during your individual performance review you reflected upon those existing skills and experiences you have acquired within your current role, and have now secured support for your further development from your clinical manager.
- On completion of this workbook, your clinical manager is required to sign the relevant section of the competency. This demonstrates their support for your role development regarding female catheterisation.
- Please ensure that you send a copy to The Academy to ensure you are entered into ESR

## Step 3 - Getting help to learn

- Identify a practice supervisor/assessor to help you achieve competency.
- You are expected to contact a suitable practice supervisor/assessor within your work area, who will be able to guide and support you as you develop your knowledge and skills.
- The person(s) you choose must themselves be an expert and active practitioner in female catheterisation and be an approved supervisor within your health care organisation.
- Formal contact with this person should be negotiated, allowing you to plan your development, review your progress, discuss and resolve any area of difficulty or uncertainty.

## Step 4 - Ensuring compliance with local guidelines and professional practice

- Ensure you have accessed, read and understood your health care organisation guidelines/policies relating to female catheterisation and any national guidelines that have been adapted for your clinical area

## Aims

- This work book is designed to equip you with the knowledge and skills to enable you to attain trust competency in female urinary catheterisation.
- State key aspects of relevant policies and procedures and protocols in relation to female catheterisation.
- Discuss when and when not to catheterise a patient
- Summarise correct, safe catheterisation on model during follow up practical session.
- State reasons for Bladder scanning and how to use the equipment.

## Legal aspects



- Must be registered practitioner, Emergency Department Assistant or band 4 Assistant Practitioner or Healthcare Assistants who are qualified to NVQ Level 3.
- Must work within The Trust's Scope for Enhancing the Scope of Professional Practice
- NMC code of conduct / Infection Prevention and Control must be applied
- Must have competency so that you are covered under the Trust's vicarious liability
- Gain informed consent and seek assistance if patient is not able to give consent
- Use products correctly (check expiry dates, length of use for drainage bags)
- Adhere to trust policies and procedures
- Documentation in nursing notes

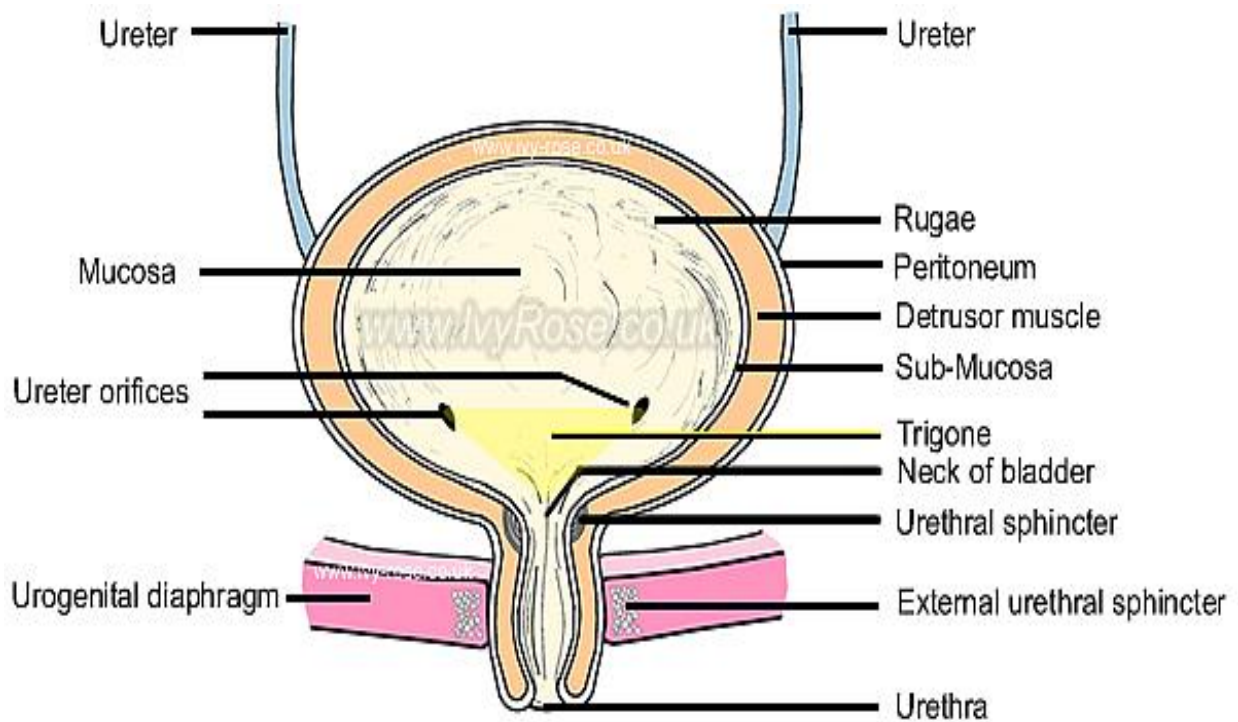
# Possible indications for catheterisation

- Tumour / injury causing spinal cord compression
- Trauma (pelvic/spinal injury)
- Acutely unwell (Diabetic Keto-acidosis, Left Ventricular Failure, Acute Renal Failure etc.)
- Retention following surgery – sometimes due to pain but also due to incomplete anaesthetic reversal
- Neurological (Multiple Sclerosis, Parkinson's Disease)
- Stroke (caution as this is not advised as first line ; the brain may recover its ability to control urination but the presence of a catheter may confuse the neurological pathway and delays discharge)
- Dementia (carefully assess if this is the best solution)
- Incontinence / retention secondary to constipation, where faecal loading prevents urination.
- Instillation of medication particularly chemotherapy in conjunction with bladder cancer treatment.
- Irrigation using saline where haematuria with clots is present.
- Any other condition where accurate fluid balance is vital to the patient's well-being and homeostasis.

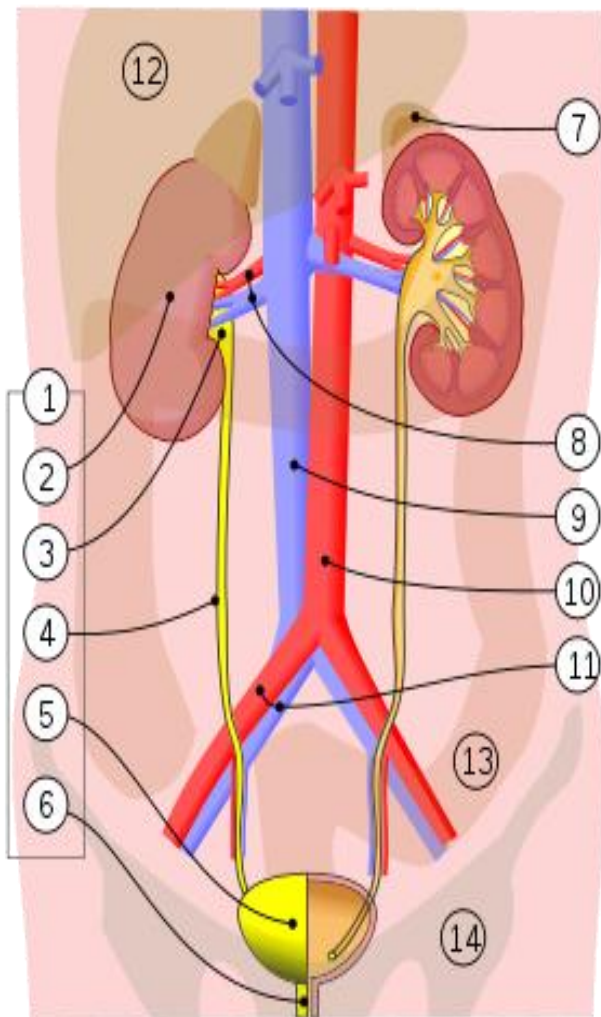


# Anatomy and Physiology of

## Female urinary system



IvyRose Ltd. 2006, Online at [www.Ivy-Rose.co.uk](http://www.Ivy-Rose.co.uk)



1. Human urinary system
2. Kidney
3. Renal pelvis
4. Ureter
5. Bladder
6. Urethra
7. Adrenal gland
8. Renal artery and vein
9. Inferior Vena Cava
10. Abdominal aorta
11. Femoral artery and vein
12. Liver
13. Colon
14. Pelvis

## The kidneys

Each person has 2 kidneys, located at the rear of the abdominal cavity in the retro-peritoneum.

The kidneys receive blood from the paired renal arteries and drain into the paired renal veins

Kidneys have homeostatic functions such as the regulation of electrolytes (Sodium (Na), Potassium (K), Calcium (Ca)), maintenance of acid-base balance, and regulation of blood pressure.



They serve the body as a natural filter of the blood, and remove wastes which are diverted to the urinary bladder. In producing urine, the kidneys excrete wastes such as urea and ammonium; the kidneys also are responsible for the re-absorption of water, glucose, and amino acids.

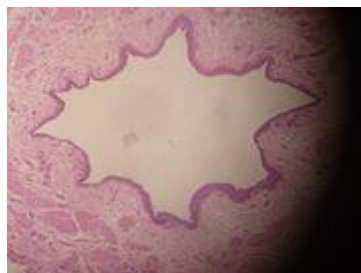
The kidneys also produce hormones including calcitriol (vitamin D), renin, and erythropoietin.

Average human produces: **1.5 litres urine / 24 hours** (effected by medication/ fluid status)

## The ureters

In human anatomy, the ureters are muscular tubes that propel urine from the kidneys to the urinary bladder. In the adult, the ureters are usually 25–30 cm (10–12 in) long and approx 3-4 mm in diameter.

In humans, the ureters arise from the renal pelvis on the medial aspect of each kidney before descending towards the bladder on the front of the psoas major muscle. The ureters cross the pelvic brim near the bifurcation of the iliac arteries (which they run over). This "pelvi-ureteric junction" is a common site for the impaction of kidney stones (the other being the ureterovesical valve). The ureters run poster inferiorly on the lateral walls of the pelvis. They then curve anterior medially to enter the bladder through the back, at the vesico-ureteric junction, running within the wall of the bladder for a few centimetres. The backflow of urine is prevented by valves known as ureterovesical valves.



The ureteric lumen is star-shaped. Like the bladder, it is lined with transitional epithelium, and contains layers of smooth muscle, thereby being under autonomic control.

The epithelial cells of the ureter are stratified (in many layers), are normally round in shape but become squamous (flat) when stretched. The lamina propria is thick and elastic (as it is important that it is impermeable).

There are two spiral layers of smooth muscle in the ureter wall, an inner loose spiral, and an outer tight spiral. The inner loose spiral is sometimes described as longitudinal, and the outer as circular, (this is the opposite of the situation in the gastrointestinal tract). The distal third of the ureter contains another layer of outer longitudinal muscle.

The adventitia of the ureter, like elsewhere is composed of fibrous connective tissue, that binds it to adjacent tissues.

## The bladder

In human anatomy, the urinary bladder is the organ that collects urine excreted by the kidneys before disposal by urination. A hollow muscular, and distensible (or elastic) organ, the bladder sits on the pelvic floor. Urine enters the bladder via the ureters and exits via the urethra.

In males, the base of the bladder lies between the rectum and the pubic symphysis. It is superior to the prostate, and separated from the rectum by the recto-vesical excavation.

The detrusor muscle is a layer of the urinary bladder wall made of smooth muscle fibres arranged in spiral, longitudinal, and circular bundles. When the bladder is stretched, this signals the parasympathetic nervous system to contract the detrusor muscle. This encourages the bladder to expel urine through the urethra.

For the urine to exit the bladder, both the autonomically controlled internal sphincter and the voluntarily controlled external sphincter must be opened. Problems with these muscles can lead to incontinence. If the amount of urine reaches 100% of the urinary bladder's capacity, the voluntary sphincter becomes involuntary and the urine will be ejected instantly.

The urinary bladder usually holds 300-350 mls of urine; a full adult bladder holds about 500mL of urine, 15 times its empty volume. Not all specialists accept these values, some say a urinary bladder can hold about 1000 mls, but it is different from person to person. As urine accumulates, the rugae flatten and the wall of the bladder thins as it stretches, allowing the bladder to store larger amounts of urine without a significant rise in internal pressure.

The desire to urinate usually starts when the bladder reaches around 125% of its working volume. At this stage it is easy for the subject, if desired, to resist the urge to urinate. As the bladder continues to fill, the desire to urinate becomes stronger and harder to ignore. Eventually, the bladder will fill to the point where the urge to urinate becomes overwhelming, and the subject will no longer be able to ignore it.

Since the urinary bladder has a transitional epithelium, it does not produce mucus.

## The urethra

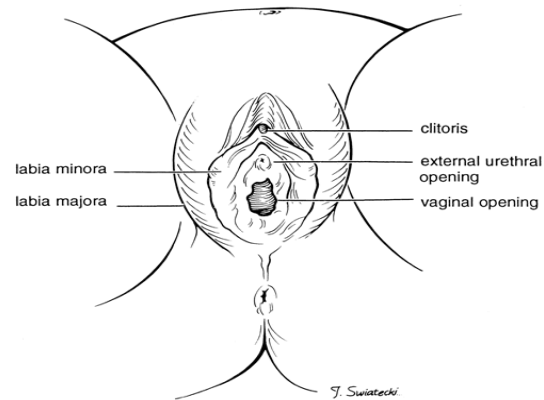
In the human female, the urethra is about 1.5–2 inches (4–5 cm) long and exits the body between the clitoris and the vagina, extending from the internal to the external urethral orifice. It is placed behind the symphysis pubis, embedded in the anterior wall of the vagina, and its direction is obliquely downward and forward; it is slightly curved with the concavity directed forward. Its lining is composed of stratified squamous epithelium, which becomes transitional near the bladder.

The urethra consists of three coats: muscular, erectile, and mucous, the muscular layer being a continuation of that of the bladder. Between the superior and inferior fascia of the urogenital diaphragm, the female urethra is surrounded by the Urethral Sphincter.

Somatic (conscious) innervation of the external urethral sphincter is supplied by the pudendal nerve.

The uro-genital sinus may be divided into three component parts. The first of these is the cranial portion which is continuous with the allantois and forms the bladder proper. The pelvic part of the sinus forms the prostatic urethra and epithelium as well as the membranous urethra and bulbo urethral glands in the male and the membranous urethra and part of the vagina in females.

The area above and on both sides of the female urethra is thought by some to be sexually sensitive and is sometimes referred to as the VAKI U-spot or urethral erogenous zone.



## Pre-insertion assessment

- Gain informed consent
- Permission from registered nurse and medical staff.
- Consider psychological needs (cultural, sexual, embarrassment – offer chaperone)
- Make a thorough assessment of the patient



## Assessing the patient

- Only catheterise if necessary - infection is high risk. Over 80% of hospital acquired UTI's are linked to catheters.
- Patients with UTI's have a 1% – 4% chance of developing bacteraemia, of which 13 – 30% are fatal
- Allergies (e.g. latex, lidocaine)
- Consider surgical history (Antibiotic cover for metalwork)
- Consider pre-existing UTI's, as catheters provide medium for bacterial growth

- Catheters act as foreign body and can cause irritation, trauma and bleeding.
- Stroke patients and incontinence – last resort
- Consider type of catheter needed
- Increases length of stay in hospital
- Consider ethnic differences in anatomy when assessing need for catheterisation.

## Choosing the catheter



These catheters were designed by Frederic Foley, a surgeon working in Boston, Massachusetts, in the 1930s, when he was a medical student.

His original design was adopted by C. R. Bard, Inc. of Murray Hill, New Jersey, who manufactured the first prototypes and named them in honour of the surgeon.

## Materials

Type	Maximum In-dwell time	Other details
Plastic	Up to 7 days	Also used as material of choice for intermittent catheterisation
PTFE (Poly-Tetra Fluoroethylene)	Up to 28 days	Latex bonded with Teflon™
Hydrogel™	Up to 12 weeks	Latex with Hydrogel™ coating
Latex coated with Silicone	Up to 12 weeks	Non-adhesive surface
100% Silicone	Up to 12 weeks	Suitable for latex allergy

## Sizes and types

- There are 2 lengths available:
  - Standard 40cm (also known as male but can be used for a female)
  - Short 20cm (also known as female and NEVER used in males )
- Charriere size (gauge) – choose the smallest size for a free flow of urine (also referred to as French size (Fr.))
- 1cH = 1/3mm and is the external diameter so a 12cH catheter is  $0.33 \times 12 = 4\text{mm}$  in diameter
- Sizes start at 5cH and go up to 28cH
- One way (rarely used), two way (standard) or three way (for irrigation) are available.



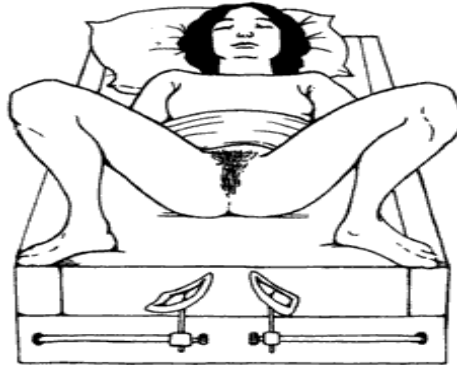
## Filling the balloon

- Balloon fill – normally 10mls, larger in some specialised catheters (30ml) and smaller in paediatric sizes (5ml)
- Fill volume is always indicated on the catheter packaging
- Balloon fills from one side first so must use exact recommended amount to ensure smoothness and no irritation
- Must be sterile water (saline causes crystallisation and air will cause the balloon to float and not sit still so is very irritant)
- Glycine is now added to the inflation water to try to prevent water escaping from the balloon as a result of osmosis
- Never inflate more than once as this invalidates the product

# Preparing the patient

- Gain informed consent, ensure patient understands procedure
- Maintain dignity as much as possible
- Position patient – supine with hips and knees flexed and apart (M shape).
- Pain – use Instillagel™ 6mls

## **The M-Shaped Position**



## Lubrication

### **Instillagel - Anaesthetic Antiseptic Lubricant**



Instillagel® is a sterile gel containing a local anaesthetic and antiseptic presented in a sterile package. In a gel made with Hydroxyethylcellulose, Propylene Glycol and Purified Water.

The gel comes in disposable syringes each containing either 6ml or 11ml.

Active ingredients are (in each 100 grams):-

- Lidocaine Hydrochloride (Local anaesthetic) 2.000g
- Chlorhexidine Gluconate Solution (Antiseptic) 0.250g
- Methyl Hydroxybenzoate (E218) (Antiseptic) 0.060g
- Propyl Hydroxybenzoate (E216) (Antiseptic) 0.025g

## What the gel does

Instillagel™ is used when putting a tube or instrument into a body cavity. It contains a local anaesthetic to prevent pain and antiseptics to reduce the risk of infection getting in, while lubricating to make the process smooth.

## Before the gel is used

Instillagel™ is contra-indicated if:-

- If patient has ever had a reaction to a local anaesthetic
- Patient has previous allergic response or hypersensitive reaction to E216 and E218 (also called parabens) or any of the other ingredients
- If the gel will be in contact with damaged membranes

Care should be taken when using Instillagel:-

- If patient has any cardiac history or is on cardiac medication
- If patient has hepatic problems
- Diagnosed epilepsy

## After using the gel

As the patient may feel a little sleepy, advise not to drive or use machinery

## How the gel is used

The gel is available in two sizes - 6ml and 11ml.

11mls is recommended for males due to length of urethra

Usually the complete contents of the size suitable for the procedure will be used. The syringe is removed from its sterile package by tearing off the backing paper. Before removing the blue cap from the end of the syringe, free the plunger by gently pressing it. Remove the cap. Insert the nozzle into the opening of the area to be anaesthetised and press the plunger slowly to push out the gel. The anaesthetic takes about 4 to 5 minutes to work after the gel has been used.

## Has the gel any side effects?

Patient might feel a slight stinging just after the gel is used, but this stops as soon as the anaesthetic starts to work. Most people find that there are no problems after the gel has been used but there may be a slight soreness when the effect of the local anaesthetic has worn off.



## Storage of the gel

The gel should not be used after the expiry date shown on the package. Store below 25 degrees centigrade.

The syringe is for single use only. If the complete contents are not used, the syringe and remaining gel must be thrown away.

## Prescribing

This gel must be prescribed or given under a Patient Group Direction.

## Gathering your equipment

Aseptic non-touch technique applies

- Catheterisation pack (inc. gloves)
- Catheter
- Lubricating gel - Instillagel™
- Normal saline for cleansing the urethral meatus
- Sanicloth for cleansing tear strip on saline sachet.
- Water for injections for balloon inflation
- Catheter bag
- Catheter stand



- Ensure you always put two catheters onto your trolley
- If you place the catheter into the vagina by mistake leave in place and use it as a guide to place the second catheter into the urethra

## Possible complications

Complication	Action	Notes
Inadequate drainage of urine - post catheterisation	Ensure drainage system is positioned below bladder.  Consider bladder washout by registered Nurse.  Replace the catheter	Blocked catheters can occur from obstruction, such as, pus, urates, phosphates and blood clots
Length of stay increased	Avoid catheterisation if possible	Trial without catheter may or may not be successful
Trauma	Use smallest catheter, lubrication and gentle technique	Use of lubricant gel is essential in a female but is often missed.
Pain on insertion	Stop. Seek medical advice	May be underlying physiological reason as to why this occurs.
Pain on inflating the balloon	Stop. Seek medical advice	The balloon may not be in free fluid space so needs to be re-assessed.
Strictures	Do not force, seek medical advice	Strictures are often undiagnosed
Detrusor muscle spasm	Consider benefits of anti-cholinergic drugs e.g. oxybutinin	Reacts to the foreign body. Can prevent flow or cause by-passing
Bleeding	Seek immediate medical advice.	Catheterisation may not have caused this but any bleeding needs investigating.
Bypassing – leaking around catheter.	Incorrect size of catheter. Incorrect balloon size. Bladder hyperirritability.	Replace with correct size.  Select catheter with 10 ml balloon.  As a last resort – hyperirritability can be reduced by giving diazepam or anti-cholinergic drugs.
Retention of Urine	May be psychological or physiological	Increase patient fluid intake.  Inform medical staff, may

## Infections

Catheterisation carries an infection risk. Catheter associated infections are the most common hospital acquired infection, possibly accounting for up to 35-40 % of all hospital infections

Identified areas are:

- The non-touch aseptic conditions and process by which the catheter is inserted and maintained as a closed drainage system. Micro organisms can reach the bladder by two possible routes: from the urine in the drainage bag or via the space between the catheter and the urethral mucosa.
- Selection of the most appropriate type of catheter and drainage system to be used.
- Assessing the need for catheterisation and the length of time the catheter is in situ.
- Training and competence of the person performing the procedure and those undertaking the aftercare, that is, patients, relatives and health care workers.

## Helpful tips

- If the patient finds it painful when balloon being blown up stop, remove water and push catheter into the bladder further and re-inflate the balloon.
- If you know you are in the right place but no urine is passed wait a few minutes, as sometimes the detrusor muscle of the bladder goes into spasm and prevents the flow of urine.

# Insertion procedure

Gain permission from registered nurse
Explain and Discuss the procedure with the patient
Gain patient's consent
Asks patient to have a wash, if able
Assist patient into a supine position ensuring dignity, privacy and comfort
Wash your hands and apply alcohol gel
Prepare dressings trolley
For patient comfort consider warming sachet
Open catheter pack and lay out contents
Remember to swab normasol™ sachet opening
Apply sterile gloves
Places sterile towel in place over legs and lap area
Clean urethral meatus area with normal saline
Expel small amount of gel for lubrication onto sterile field
Part the labia and slowly insert instillagel™ explaining that it might sting / be cold
Wait for 4 minutes (use time wisely)
Remove gloves and wash hands
Apply clean sterile gloves
Insert catheter 6-8 cm into the urethra (smallest Charriere possible)
Wait for urine flow to start
Inflate balloon with 10mls sterile water (stop if pain present)
Connect bag using non-touch technique without pulling on catheter
Clean off excess gel
Ensure patient is comfortable with call bell
Ensure correct positioning of drainage system, below bladder
Restore environment
Document in patient's notes

## Post Procedure

- Dispose of equipment into an orange clinical waste bag, seal before removing from the trolley.
- Ensure that patient is comfortable and privacy and dignity are maintained.

## Documentation

- Document in nursing notes
- Document onto fluid chart
- Consent from patient & doctor
- Date, time & reason inserted
- Type, size, batch number & manufacturer of catheter
- Type, volume and expiry date of lubricant
- Lubricant should be prescribed for the patient
- Number of millimetres inserted into the balloon for inflation
- Amount drained
- A review date to assess the need for continued catheterisation or date of change of catheter.



## Fluid Charts

Patients who have urinary catheters should also have a fluid chart.

Addressograph  
Name: [Name] Date of Birth: [DOB] Hospital Number: [Number]  
Swindon and Marlborough 02233

Fluid Balance Chart  
Date: [Date] Previous 24 hour fluid balance: [Balance]

Time	Input	Output	Urine	Urine
01:00				
02:00				
03:00				
04:00				
05:00				
06:00				
07:00				
08:00				
09:00				
10:00				
11:00				
12:00				
13:00				
14:00				
15:00				
16:00				
17:00				
18:00				
19:00				
20:00				
21:00				
22:00				
23:00				
24:00				

If urine output less than 30ml/hr for two consecutive hours carry out a full set of observations including BGR.

Fluid Balance Chart (FBC) 2012

This is a legal document and should provide information about input and output of fluid by careful monitoring of the patient to reduce the risk of infection.

## Bladder Scanning

A bladder scan will measure the bladder volume quickly, accurately and is non-invasive on male, female and paediatric patients and improves efficiency of health care workers by reducing costs and saving staff time.



Bladder Scan helps:

- Diagnose urinary retention
- Evaluate post-operative urinary retention (POUR)
- Reduce unnecessary catheterization
- Reduce catheter-associated urinary tract infection (caUTI)
- Identify a blocked Foley catheter\*
- Evaluate need to catheterize after Foley catheter removal
- Evaluate need to catheterize during intermittent catheterization
- Assist in bladder retraining (biofeedback)
- Verify empty bladder

## Removal of Catheter

Check documentation of when catheter was inserted for relevant information regarding the millimetres inserted into the balloon for inflation.

## Equipment

- Dressings pack containing sterile towel, gallipot, foam swab.
- Disposable Gloves
- Syringe for deflating balloon.

Action	Procedure
Catheters can be removed early in the	Any retention problems can be dealt with

morning	during the day
<b>Explain procedure to the patient and of any potential problems – urgency, frequency and discomfort caused by irritation of the urethra by the catheter</b>	Patient knows what to expect and can plan daily activities
If required, take a catheter specimen of urine from the sampling port	To assess whether post catheter antibiotic therapy is needed.
Wearing disposable gloves use saline to clean the meatus and catheter, always swabbing away from the urethral opening.  <b>In women never clean from the perineum or vagina towards the urethra</b>	To reduce risk of infection  Reduces risk of bacteria from the vagina and perineum contaminating the urethra.
Release leg straps or aqua sleeve.	Easier removal of catheter
Use syringe to deflate balloon, check the volume	Confirms how much water is in the balloon to ensure balloon is completely deflated before removing catheter
Ask patient to breathe in and out; as patient exhales, gently remove catheter.  <b>Remember to warn male patients that they may be some discomfort as the catheter passes through the prostate gland</b>	To relax pelvic floor muscles
Clean Meatus and make the patient more comfortable	To maintain patient comfort and dignity
<b>Encourage patient to exercise and drink 2-3 litres of fluid per day</b>	To prevent urinary tract infections

## Relevant policies, procedures and Resources

- Royal Marsden Manual of clinical nursing procedures (8<sup>th</sup> edition)(2011)
- Framework for Enhancing the Scope of Professional Practice
- Infection control policies
- Record keeping guidelines
- Mental Capacity Act (2005 & 2010)
- Epic2 guidelines (2007)
- Royal College of Nursing , Catheter Care guidance(2008)

*Acknowledgements and Special thanks to:*

**IvyRose Ltd. 2006, Online at [www.Ivy-Rose.co.uk](http://www.Ivy-Rose.co.uk)**