European Association of Urology Nurses

Good Practices in Health Care

URETHRAL CATHETERIZATION

Section 1: Male Catheterization

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European Association of Urological Nurses

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INTRODUCTION TO THE EUROPEAN ASSOCIATION OF UROLOGICAL NURSES

The foundation of the European Association of Urological Nurses (EAUN) is a direct result of the first nursing conference, which was organized at the XVth Congress of the European Association of Urology in Brussels, April 2000, with the administrative and financial support of the EAU board.

The aims and objectives of the EAUN are:

- To act as the representative body for European nurses in urology and facilitate the continued development of urological nursing in all its aspects.
- To foster the highest standards of urological nursing care throughout Europe
- To encourage urological research undertaken by nurses and enable the broadcasting of its results
- To promote the exchange of experience and good practice between its members
- To establish standards for training and practice for European urological nurses
- To contribute to the determination of European urological health care policies

Supporting Statement on Male Catheterization:

Health care is not bound by geographical boundaries and the role of the nurse should reflect a sound knowledge and skills base across all European countries. The development of this male catheterization booklet aims to support the skilled nurse with the theoretical and procedural evidence required to underpin their practice, and ensure patient safety, dignity and comfort. This document should be used to support those practitioners who have been assessed in practice as 'competent' in this procedure.

This document is a support to clinical practice and should be used in conjunction with local policies and protocols.

1. MALE CATHETERIZATION - OVERVIEW

1.1 What is catheterization?

Catheterization is a procedure that involves the insertion of a hollow tubular instrument into the urinary bladder, usually via the urethra. The catheter, once in-situation, will allow for drainage of urine, investigative tests, and instillation of agents or stenting of the urethra. Indwelling catheters are secured in the bladder by inflating the integral balloon following the insertion. Male catheterization is performed for a wide variety of reasons some of which are listed in Section 1.2. However, a key factor in the health care professional's role in undertaking male catheterization is in the provision of patient choice, consent, information and support.

Catheterization in males can be more difficult and hazardous than in females because of the structure and length of the urethra, it is therefore essential that health care professionals undertaking the procedure are aware of the associated potential complications.

1.2 When is catheterization necessary?

During individual patient assessment, consideration needs to be given to the patient's suitability for urethral catheterization as opposed to supra-pubic or intermittent catheterization.

Indications for male catheterization include:

1) Acute urinary retention
2) Chronic urinary retention
3) To monitor/record/drain residual urine volumes
4) To monitor accurate urine output, e.g., post-operatively
5) To allow bladder irrigation/lavage
6) To allow instillation of medications, e.g., chemotherapy
7) To bypass an obstruction
8) To enable bladder function tests, e.g., urodynamics
9) To facilitate continence and maintain skin integrity (when conservative treatment methods have been unsuccessful)
10) In some special circumstances to obtain a sterile urine specimen

Caution should be displayed in patients with urethral strictures, suspected urethral injury, known 'false passage', following recent prostatic, bladder neck or urethral surgery, in cases of suspected urinary tract infection, those with artificial prosthesis or who have mental disorientation.

1.3 Types of catheters

New materials and improvements in design have allowed manufacturers to offer a wide range of urinary catheters and appropriate selection ensures that complications are minimized (1). Catheters as with all medical products should be used in line with the manufacturer's recommendations, in order to avoid product liability (2).

Catheter selection should be determined by:

a) Assessment of why the catheter is needed
b) Assessment of how long the catheter will remain in-situation (will help determine material choice)
c) Diameter size and length (to facilitate adequate drainage and promote patient comfort)
d) Catheter tip design.
   Examples of these include:
   - Whistle-tipped catheters provide a larger drainage area and therefore facilitate drainage of debris and clots
   - Roberts's catheters facilitate drainage of residual urine at the bladder base as they have eyes below as well as above the balloon
   - Tieman-tipped catheters have a curved tip and are used to negotiate the membranous or prostatic urethra in some patients, e.g., those with strictures or prostatic enlargement

(Exceptional cases may require special products not reviewed in this document.)

Catheters Materials:

1. Polyvinyl chloride (PVC/Plastic)
2. Latex (Uncoated or coated)
3. 100% Silicone

The catheter material will provide an indication of how long the catheter can stay in the urethra; short term catheters generally have an indwell time of up to 28 days and long term catheters up to 12 weeks.

1.3.1 Short term catheters

Plastic catheters (PVC)

PVC catheters are relatively inexpensive and they possess a large internal diameter, therefore offering a good drainage facility. At body temperature the material softens slightly; but PVC is stiff and can prove uncomfortable for the patient if left in-situation for any length of time (3), the material also encrusts quickly. PVC catheters are generally used for intermittent use (1), or for post- operative drainage following some prostatic and bladder surgical procedures.

Latex Catheters
Latex, which is a pure form of rubber, is an ideal material to form the core of an indwelling catheter due to its flexibility, which in-turn offers improved comfort for the patient. Pure latex however causes irritation within the urethral mucosa (4) resulting in discomfort and potential urethral trauma. The material also has a tendency to incrust rapidly (5) and with the increasing incidence of latex hypersensitivity (6) it should be used with caution. Young (7) suggests the use of latex can cause anaphylaxis

PTFE- coated catheters.
Polytetrafluoroethylene (PTFE) or 'Teflon' is an inert material fixed onto a latex core to form a catheter suitable for short term usage. The incidence of urethritis (8, 9) and encrustation is lessened in the short term and patient comfort is improved using PTFE catheters. The catheter can stay in-situation for up to 28 days, but loss of water from the balloon and peeling of the PTFE coating can occur. These catheters are unsuitable for use in patients with latex hypersensitivity.

1.3.2 Long term catheters

100% silicone catheters
All silicone catheters have the advantage of a larger drainage lumen as they are uncoated. They are biocompatible with the urethra mucosa and offer resistance to encrustation (10). The major advantage of the material is that it is hypo-allergenic. Silicone however can be less flexible than the latex coated catheters and there is evidence that the balloon loses water (11) during the in-situ time due to gas diffusion. Silicone catheters can stay in-situation for up to 12 weeks and are suitable for patients with latex hypersensitivity.

Latex Catheters coated with hydrogel
Hydrogel is a material that has been successfully used in the manufacture of many surgical instruments e.g., contact lenses, and it is highly biocompatible with human tissue (12). Hydrogel is a polymer that absorbs water and this forms a smooth surface on the catheter. The risk of urethral trauma while introducing the catheter is diminished and there is evidence to suggest a lower incidence of catheter bypass and urethral irritation. The catheter is resistant to encrustation (5) and settlement of bacteria (13, 14), by which the risk of infection diminishes. They can remain in-situation for up to 12 weeks. These catheters are unsuitable for use in patients with latex hypersensitivity.

Silicone-elastomer
Silicone-elastomer coated latex catheters offer the advantage of having biocompatible properties that can reduce urethral mucosal irritation. Due to the flexibility of the material it offers the patient greater comfort and can remain in-situation for up to 12 weeks. These catheters are unsuitable for use in patients with latex hypersensitivity.

Latex Catheter coated with Hydrogel and Silver
This is the most recent innovation in the field of catheter coatings. Scientific studies (in vitro and in vivo) suggest that the silver coating reduces and delays the incidence and onset of urinary tract infection (15, 16). The effect of the coating is assured for a period of about 21 days, but the catheter can remain in-situation for up to 12 weeks. These catheters are unsuitable for use in patients with latex hypersensitivity.

A meta-analysis by (16) of the use of silver alloy coated catheters indicated a significant reduction in the incidence of urinary tract infection, however, further research needs to be undertaken and should include issues related to cost-efficacy.

Practitioners need to have an understanding of the variety of products available and use them in line with manufacturers' recommendations and guidelines.

1.3.3 Catheter Length and Diameter (Charrière)

Length

- Paediatric length 30 - 31 cm.
- Female length 26 - 26 cm.
- Standard length 40 - 45 cm.

Standard length catheters should always be used in urethral catheterization in the adult male.

Diameter (Charrière)
The selection of the appropriate charrière size is the key to the success of the catheterization. The measuring instrument used to indicate the exterior diameter of the catheter is the Charrière (Ch) or French Gauge (FG).

- 1 Ch = 1/3 mm diameter.

Selection of the correct catheter size should reflect patient comfort and an adequate drainage facility (a 12 Ch catheter has a drainage capacity of 100 litre in 24 hours, the average urine production is 1.5 litre per 24 hours) Larger diameter catheters can result in increased urethral irritation and urethral trauma, therefore small lumen catheters should be the health care professional's first choice (17).

When catheterizing men a size 12 or 14 Ch catheter should be the first choice. However, if the urine contains clots or debris (sediment) a larger diameter catheter is indicated. Catheters larger than 18 Ch are seldom necessary for common drainage.

Table 1: Urethral catheter charrière sizes and indications for use (22)

Charrière size	Indications for use
12Ch - 4mm	Clear urine, no grit, debris, or haematuria.
14Ch - 4.7mm	Clear urine, no grit or debris, no haematuria.
16Ch - 5.3mm	Clear or slightly cloudy urine, both sexes. No or mild grit. Light haematuria with no clots.
18Ch - 6mm	Moderate to heavy grit and debris. Haematuria with moderate clots.

1.3.4 The Balloon

There are different sizes of balloons:

- 5 ml. Paediatric balloon
- 10 ml. Balloon for standard use
- 30 ml. For specific post-operative use.

Large balloon catheters should not be used for standard usage as the following problems can occur:

- increased bypassing
- increased irritation and bladder spasms
- heaviness of the balloon increases bladder sensitivity and pain and may result in bladder neck damage with long-term usage (18)

The balloon should be filled as per manufacturer's recommendations with the directed volume of sterile water.

The following substances have to be avoided for filling the balloon:

- **Air** - causes the balloon to float on top of the urine resulting in poor drainage
- **Non sterile water** - can contain impurities and bacteria that can defuse into the bladder
- **NaCl (Saline) 0.9%** - The use of saline solution can cause crystallizing in the inflating channel causing problems with balloon deflation. (19)

1.3.5 Suggested Additional Reading

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2. PATIENT PREPARATION

2.1 Consent

Catheterization is an invasive procedure that can cause embarrassment, physical and psychological discomfort and impact on the patient's self image. To ensure the patient is fully prepared for catheterization it is the responsibility of the health care professional to inform the patient of the reasons and necessity for the procedure, and obtain the patient's permission (20).

In many areas of medicine, patients are required to sign a consent form that indicates agreement for the practitioner to undertake a procedure, It also implies an understanding of the event and the associated potential complications/problems. At present it is not common practice within Europe for patients to provide written consent for catheterization; it is however a necessity that verbal consent and agreement is reached and the relevant information recorded in the patients medical and/or nursing notes (21).

2.2 Information and support

Explaining the procedure and providing the reason for catheterization to the patient will help reduce patient anxiety and embarrassment and help the patient to report any problems that may occur while the catheter is in-situation (22). Relaxing the patient by offering reassurance and support will help for smoother insertion of the catheter and assist in avoiding unnecessary discomfort and the potential of urethral trauma during the insertion (23, 24).

3. EQUIPMENT AND PREPARATION

Catheterization is a sterile procedure as it involves instrumentation of a sterile tract. It is imperative that the health care professional has a good understanding of the principles of the aseptic procedure as this will help to reduce the risk of UTI (25, 26, 27).

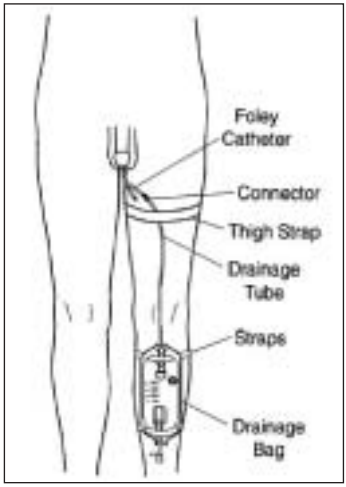
3.1 Anesthetic lubricating gel

The use of anesthetic lubricating gels is well recognized for male catheterization. However, it is essential to ask the patient if they have any sensitivity to lignocaine, chlorhexidine or latex before commencing the procedure. Ten to fifteen ml of the gel is instilled directly into the urethra until this volume reaches the sphincter/bladder neck region. Blandy (28) and Colley (29) recommend a 3 to 5 minute gap before starting the catheterization after instilling the gel, but it is important to follow manufacturer's guidance.

By inserting the anesthetic gel, the friction between the catheter and the mucosal layer will reduce and lead to a smooth insertion of the catheter into the bladder (30). A maximized anesthetic effect will help the patient to relax and the insertion of the catheter should be easier.

3.2 Equipment needed

1. Sterile catheterization pack containing gallipots, receiver, low-linting swabs, disposable towels.
2. Disposable pad for bed protection.
3. 2 pairs of gloves (one of which must be sterile for handling catheter).
4. Selection of appropriate catheters. (It is advisable to take a spare catheter in addition to the one you want, and one of a different/smaller size)
5. Sterile anesthetic lubricating jelly (1- 2 tubes).
6. Universal specimen container (if required).
7. Cleansing solution (not necessarily antiseptic solution) (31).
8. Bactericidal alcohol hand rub.
9. 10ml sterile water (inflation of balloon).
10. Syringe and needle (to draw up sterile water and inflate balloon)
11. Disposable plastic apron/protective clothing.
12. A closed urinary drainage system, e.g., a night bag, leg bag (Figure 1) or catheter valve.
13. A catheter drainage bag stand, if required.



4. INSERTION PROCEDURE

4.1. General Insertion Procedure (to be used in conjunction with local policy/protocol)

Action	Reason
1. During the procedure explain the process to the patient	To ensure the patient understands the procedure.
2. (a) Undertake procedure on the patient's bed or in clinical treatment area using screens/curtains to promote and maintain dignity	To ensure patient's privacy. To ensure patient's privacy.
(b) Assist the patient to get into the supine position (Figure 2). **Figure 2: Supine position**  Supine	To ensure the penis is accessible.
(c) Do not expose the patient at this stage of the procedure.	To maintain patient's dignity and comfort.
3. Wash hands using soap and water or bactericidal alcohol hand rub.	To reduce risk of infection (31)
4. Put on a disposable plastic apron or protective clothing.	To reduce risk of cross-infection from micro-organisms on uniform.
5. Clean and prepare the trolley, placing all equipment required on the bottom shelf.	The top shelf acts as a clean working surface.
6. Take the trolley to the patient's bedside	
7. Open the outer cover of the catheterization pack and slide the pack onto the top shelf of the trolley.	To prepare equipment.
8. Using an aseptic technique, open the supplementary packs.	To reduce the risk of cross infection
9. Remove cover that is maintaining the patient's privacy and position a disposable pad under the patient's buttocks and thighs.	To ensure urine does not leak onto bed
10. Clean hands with a bactericidal alcohol hand rub.	Hands may have become contaminated by handling the outer packs.

Action	Reason
11. Put on gloves (preferably sterile).	To reduce risk of cross-infection.
12. Place dressing / protective towel (sterile if possible) across the patient's thighs and under penis	To create a protective field.
13. Lift the penis and retract the foreskin if present using a gauze swab and clean the glans penis with the cleaning solution	Lifting the penis straightens the penile urethra and facilitates catheterization (32). To reduce the risk of introducing infection
14. Slowly instill 10-15mls of the anesthetic lubricating gel into the urethra. Remove the nozzle from the urethra and hold the penis firmly with the thumb and fingers; alternatively use a penile-clamp to prevent the gel from leaking out. Wait 3-5 minutes to ensure a maximized anesthetic effect (24, 26, 27, 33, 34).	Adequate lubrication helps to prevent urethral trauma. Use of a local anesthetic minimizes the discomfort experienced by the patient and can aid success of the procedure.
15. Replace existing gloves with a sterile pair, and place new sterile towel around penile area	In preparation for aseptic catheterization procedure
16. Place the receiver containing the catheter between on the sterile field. (You can connect the collecting bag/ system at this stage if preferred.) Gently insert the catheter 2-3 cm at a time.	To prevent contamination of the catheter. To minimize patient discomfort and reduce incidence of urethral trauma.
(a) Advance the catheter to the bifurcation (if no urine drains gently apply pressure over the symphysis pubis area).	Advancing the catheter ensures that it is correctly positioned in the bladder (27, 35, 36).
(b) Slowly inflate the balloon according to the manufacturer's direction, having ensured that the catheter is draining urine beforehand.	Inadvertent inflation of the balloon in the urethra causes pain and urethral trauma (30, 37).
(c) Withdraw the catheter slightly and attach the drainage bag/system if this has not already been done.	Withdrawing the catheter ensures the balloon sits at the bladder base ensuring optimal urine drainage.
(d) If the patient desires secure the catheter using a support strap. 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.

Action	Reason
17. Ensure that the glans penis is cleansed after the procedure and reposition the foreskin if present.	Retraction and constriction of the foreskin behind the glans penis resulting in paraphimosis may occur if this is not done (24).
18. Help the patient into a comfortable position. Ensure that the patient's skin and the bed are both dry.	If the area is left wet or moist, secondary infection and skin irritation may occur.
19. Measure the amount of urine.	To be aware of bladder capacity for patients with previous occurrences of urinary retention. To monitor renal function and fluid balance. It is not necessary to measure the amount of urine if the patient is having the urinary catheter routinely changed.
20. Take a urine specimen for laboratory examination, if required	To rule out urinary tract infection
21. Dispose of equipment in a plastic clinical waste bag and seal the bag before moving the trolley.	To prevent environmental contamination.
22. Record information in relevant documents, this should include: • reasons for catheterization • residual volume • date and time of catheterization • catheter type, length and size • amount of water instilled into the balloon batch number and manufacturer • drainage system used • problems negotiated during the procedure • review date to assess the need for continued catheterization or date of change of catheter.	To provide a point of reference or comparison in the event of later queries.
23. Record patient experience and any problems	To provide a point of reference or comparison in the event of later queries.

4.2 Difficulties that may occur during insertion

Difficulty catheterizing the male patient can result for a variety of reasons. Medical advice and support should be sought if problems during or after the insertion occur.

Complications of catheters include UTI, trauma and inflammatory reactions, urethral stricture, calculi and possibly carcinoma of the bladder (37). These can result in one or more of the following symptoms occurring: pain, bypassing, blockage, catheter expulsion and bleeding. The role and significance of antibiotic therapy in catheter care is diminishing with the practice of low dose, long-term prophylactic treatment courses discontinuing (38). Bacteria present in the urine is unavoidable once the catheter has been in situation for longer than 5-7 days, however antibiotic therapy is now reserved until patients become symptomatic and with proven bacteriuria (38). Approximately 20% of patients with an indwelling urethral catheter develop asymptomatic bacteriuria within the first 5 to 7 days after insertion. In patients with an open drainage system, bacteriuria occurs within 2 to 3 days; with closed drainage systems, 50% develop bacteriuria within 10 -14 days (31). Overall, however, only 2-6% of patients develop a symptomatic UTI (39).

4.2.2 Recommendations

- If experiencing difficulty during catheterization instilling some additional anesthetic gel to further dilate and lubricate the urethra (40) may be of benefit.
- If resistance is felt at the external sphincter, increase the traction on the penis slightly and apply steady, gentle pressure on the catheter. Ask the patient to strain gently as if passing urine
- A small lumen catheter can buckle/kink in the urethra; in some instance a slightly larger Ch size might help (41).
- The inability to negotiate the catheter passed the S-shaped bulbar urethra can be as a result of tightening of the external sphincter, a urethral stricture, a false passage or an enlarged prostate. This can be overcome by using a curved tipped (Tieman) catheter. These special catheters need a special technique and should be attempted by those with experience and training (24, 35, 40, 41).
- In cases of hypospadias the urethral orifice is positioned on the proximal aspect of the penis, therefore knowledge of the patient's past medical history can help identify this.

4.3 Troubleshooting (Problem Management)

Problem	Cause	Suggested Action
1. Urinary tract infection introduced during catheterization.	Inadequate aseptic technique and/or urethral cleansing. Contamination of catheter tip.	Manage and treat immediate symptoms, inform medical staff. Obtain a catheter specimen of urine.
2. Urinary tract infection introduced via the drainage system.	Inappropriate handling of equipment. Breaking the closed system.	As above

Problem	Cause	Suggested Action
3. Urethral mucosal trauma	Incorrect size or positioning of catheter. Poor insertion technique.	Check the catheter support and apply or reapply as necessary. Re-catheterize the patient using the correct size catheter.
	Creation of false passage as a result of catheter insertion technique	Remove catheter if not draining urine. Seek medical advice.
4. Inability to tolerate indwelling catheter.	Urethral and/or bladder mucosal irritation.	Use catheter support strap to prevent unnecessary pulling. Discuss use of anti-cholinergic medication with medical staff. Consider use of 100% silicone catheter in cases of suspected latex hypersensitivity (41, 42, 43, 45)
	Impacting on patient's self-image.	Explain the need for and function of the catheter. Offer reassurance and support. Discuss alternative management options with the multi-disciplinary healthcare team
5. Inadequate drainage of urine	Kinked drainage tubing.	Ensure free flow of urine
	Blocked tubing, e.g., blood clots, debris.	If a three-way catheter is in place commence irrigation. If a standard indwelling catheter is in use, squeeze the catheter with normal saline (NaCl).
	Incorrect placement of a catheter. e.g. in bladder neck	Re-site the catheter
6. Leakage of urine around catheter (Bypassing).	Bladder irritation	Ensure the catheter/drainage system is well supported Discuss use of anticholinergic therapy with medical staff.
	Irritation from the catheter balloon.	Ensure a 10ml balloon catheter has been used for standard drainage
	Incorrect size of catheter.	Replace with the correct size, usually 2Ch smaller.

4.4 Proactive and Preventative Care

4.4.1. Hand Hygiene

Of primary importance in catheter care is the prevention of an acquired UTI. This can be aided by healthcare professionals washing their hands and wearing gloves before and after any interaction with a catheter (49). Healthcare professionals also have a pivotal role in educating and disseminating good hand hygiene practice to patients.

4.4.2 Promoting Fluid Intake

A 'good fluid intake' is associated with catheter care advice but until recently there has not been much evidence to support this information. However, a good oral intake is now being proven to be beneficial in that it can reduce, and delay, catheter blockage from Gram negative bacteria such as Proteus Mirabilis (45). A good fluid intake also dilutes urine and therefore can inhibit bacterial growth (46). A good fluid intake also ensures a constant downward drainage and flushing effect (44). Poor fluid intake can precipitate constipation, which can impede urinary drainage via a catheter by causing pressure, occlusion and kinking (47). Interestingly the type of fluid consumed appears to be insignificant as long as the volume is sufficient to prevent concentration of urine; however Cranberry juice has been the focus of some studies and advice over the last decade (45).

4.4.3 Cranberry Juice

Acidification may prevent or reverse UTIs. Cranberry juice causes acidification of urine and is therefore becoming integral in catheter care advice (48). Healthcare professionals should display caution in advocating this advice routinely, as evidence suggests that to achieve sufficient bacteriostasis high concentrations of cranberries are needed (49). Their mode of action is to prevent pathogens adhering to, and subsequently colonizing, mucosal surfaces such as the urinary tract (50). Cranberries can also inhibit the colonization of bacteria in the gut which is the source of most uro-pathogens (51). It should be noted that the bacteria affected by cranberry juice is restricted to a small group of bacteria (48). Cranberry juice may be contra-indicated in some patients e.g., patients prone to oxalate or uric acid calculi (52). Cranberry juice is contraindicated in patients on anticoagulation therapy and should not be recommended to this group (53). Advice therefore needs to be given on an individual patient basis and in summary it is a comparatively safe and natural remedy which can provide symptomatic and therapeutic relief for patients with UTIs, stones or excessive mucus formation (48).

4.4.4 Meatal Cleansing

Routine daily personal hygiene is all that is needed to maintain meatal hygiene (44, 54, 55). Trials of various cleansing agents, e.g., Chlorhexidine, Saline etc., have failed to demonstrate a reduction in bacterial growth rate, meaning soap and water is sufficient to achieve effective meatal cleansing (56). However attention must be given to educating non-circumcised patients to clean underneath their foreskin daily to remove smegma, as this may increase the patient's risk of developing a UTI in addition to causing trauma and ulceration to the meatus and glans penis (44, 47).

4.4.5 Bladder Washouts/Instillations

Disconnection of the closed drainage system increases the risk of introducing bacteria into the urinary tract and should be avoided (57). Bladder washouts or instillations should not be performed as part of catheter management. Washouts have been conclusively proven to be effective in preventing catheter encrustation (63). Although citric acid solutions (such as Suby G and Solution R) may slow the build-up of encrustation, instillation can potentially cause an inflammatory tissue reaction (45). The action of introducing volumes of fluids into the bladder can damage the urothelium causing tissue trauma and actual catheter blockage (64). Bladder washouts are therefore relatively ineffective and may even be detrimental as they require breakage of the closed drainage system (44).

4.4.6 Constipation

Constipation can cause blockage of the catheter, and hence can impede urinary drainage, resulting in retention or bypassing (45). This can be both painful and distressing for the patient and may cause the patient to leak urine. In turn this can compromise the integrity of the patient's skin as well as their personal well-being. In extreme circumstances, constipation can cause catheter expulsion (60). Good fluid intake, promoting mobility and an adequate fiber intake are all contributing factors in the prevention of constipation which patients should be educated about.

4.4.7 Catheter Bags

The choice of drainage bag is dictated by the rationale for catheterization, the intended duration, patient mobility and patient choice. The following should be considered:

- Bag capacity
- Tube length
- Tap design
- Placement (leg or abdomen)
- Manual dexterity
- Mobility
- Support systems - straps, sleeves, belts

4.4.8 Catheter Valves

Catheter valves allow the bladder to fill and empty, mimicking the natural activity of the bladder (61). This may be significant when voiding is re-established after a period of catheterization, facilitating a quicker return to a normal voiding pattern as bladder tone is maintained (32, 62, 63, 64). When the valve is released the action of a full bladder emptying also creates a flushing effect which may help to prevent bacteria ascending into the bladder and also prevent blockages and encrustation in the catheter lumen (32, 61).

Some catheter valves form part of the closed drainage, link system (52, 56) and they can be used throughout the day and night. However they also provide the patient with the option of attaching a night bag if they desire continuous night drainage. Patients with catheter valves

may also benefit from a greater feeling of independence and freedom, and hence improved self-esteem, as catheter valves may be more discreet and comfortable than leg-bags (61, 62).

Catheter valves cannot be fitted on all patients and health care professionals must individually assess suitability. Catheter valves are contraindicated in the following patients:

- Have a limited bladder capacity (58)
- Have reflux or renal impairment (62, 63)
- Have a urinary tract infection
- Have detruser instability (61, 62)
- Have nocturnal polyuria (61)
- Have had recent any major urological or reconstructive surgery
- Mentally disorientated (61)
- Impaired bladder sensation (61)
- Poor manual dexterity
- Immobility

It is imperative that the manufacturer's directions are followed as deviation from them shifts the products liability from the manufacturer to the individual healthcare professional (61).

4.5 Catheter Diary/Record Sheet

Some catheter manufacturers have printed booklets that accompany their catheters. Even if the catheter being used does not include such a booklet, it is important to record the following information:

- Date of use
- Catheter type/balloon/Ch
- Lot number from packaging
- Expiration date
- Exceptional patient information (e.g., patient has penal implant)
- Reason for catheter or reason for changing catheter
- Was catheter easy to insert? If "no", explain what problem(s) occurred.
- Describe in detail (including date and time) any problems or patient complaints that occur while the catheter is in-situ.

Maintaining such a diary will help to determine if a problem, such as encrustation, is patient-specific or product-related, and assist in evaluating the appropriate intervention (45). By keeping such records, potential problems may be detected and prevented. For example, if a particular catheter always blocks after 8 weeks, it should be changed every 6 weeks to prevent the problem.

In addition, manufacturers should always be notified of specific, recurring problems with their products.

4.6 Sexual Activity

Healthcare professionals must be prepared to discuss and advise patients and their partners about appropriate methods they can adopt to maintain sexual activity (47). For men this involves the catheter being folded back along the underside of the shaft of the penis and held in place with a condom (60). Advice must be given about the length of the catheter and positioning of the closed drainage system to prevent any urethral trauma or traction during an erection (58). Men need to be assessed to determine if they would be appropriate for education on how to remove and re-catheterize themselves around sexual activity (47). In addition, for the sexually active man, health professionals should carefully determine if other methods of catheterization, such as intermittent catheterization using hydrophilic catheters or supra-pubic catheterization, might not be a better option for the patient.

4.7 Advice and Information for patients and care-givers

Patients and cave-givers should be provided with written and verbal information to support the following:

- How to obtain supplies
- Frequency of catheter and bag changes
- Information on who will change their catheter
- How to empty and care for the catheter and bags
- Contact numbers to access advice and support

5. CATHETER REMOVAL

5.1 Removing a catheter

5.1.1 Equipment

1. Disposable gloves.
2. Syringe for deflating balloon.
3. Disposable pad (to protect bed)
4. Plastic disposable apron or protective clothing
5. Gauze swabs / Disposable wipes

5.1.2 Procedure

Action	Rationale
1. Catheters are often removed early in the morning (refer to local policy).	So that any retention problems can be dealt with during the day.
2. Explain procedure to patient and inform him of the potential problems that may occur following removal, i.e., urgency, frequency and dysuria. Symptoms should resolve over the following 24-48 hours. If not further investigation may be needed e.g., mid-stream urine specimen taken for culture. Discuss the need for an adequate oral fluid intake of approximately 2-3 litres of fluid per day.	For adequate flushing of the bladder, and to help dilute and expel debris or infected urine, if present.
3. Check volume of water in balloon (refer to patient documentation), then use syringe to deflate balloon.	To confirm how much water is in the balloon. To ensure balloon is completely deflated before removing catheter.
4. Ask patient to breathe in and then out: as patient exhales, gently remove the catheter. Patients should be warned of discomfort as the deflated balloon passes through the prostate gland.	To relax pelvic floor muscles.
5. Clean meatus using gauze / disposable wipe, clear away equipment, and make the patient comfortable.	

Action	Rationale
6. Used equipment should be placed in clinical waste bag and disposed of in line with local policy	To reduce risk of cross infection to others
7. Document procedure and note any difficulties/ problems experienced. Commence fluid balance chart for monitoring patient's ability to void urine following removal of the catheter	To ensure any problems are documented for future reference To monitor for potential problems following removal of catheter i.e. retention of urine; if patient does not void in the first six to eight hours, or if they are experiencing supra-pubic pain then a bladder scan and discussion with medical team is indicated. Re-catheterization could be indicated in this event.

5.1.3 Potential problems during catheter removal

There are several problems that might arise during removal of a urethral catheter and it is vital that the health care professional is aware of the actions required to overcome them. They include those listed below.

Problem	Cause	Suggested Action
1. Unable to deflate balloon.	Damaged or faulty valve on the inflation/ deflation arm of the catheter.	Check the valve for evidence of damage. Try adding 2-3ml of sterile water into inflation channel to dislodge blockage. If unsuccessful use a syringe and needle to aspirate the fluid from the inflation arm (above the valve). (65)
	Channel obstruction	1. Attach syringe to the inflation arm and leave in place for 20-40 minutes. The effect of gravity will help with the deflation process. (65)
		2. Squeeze the visible tubing to try and displace crystal formation in inflation channel. (65)
		3. If the above are unsuccessful refer to medical staff as the balloon will need to be punctured suprapubically using a needle under ultrasound visualization. (40, 65)
		4. Following catheter removal the balloon should be inspected to ensure it is intact and that there are no fragments left in the bladder. (40, 65)

Problem	Cause	Suggested Action
2. Wrinkling of balloon following deflation resulting in formation of a 'cuff'	Balloon unable to return to pre-inflation shape resulting in formation of a ridge	Withdraw catheter gently of deflation of balloon, but if resistance experienced stop the procedure. Using a syringe re-insert 1-2 ml of saline (NaCl) back into the balloon; this action will prevent formation of a 'cuff'. Withdrawal of the catheter should now be easier and patient discomfort and potential urethral trauma will be reduced.
3. Pain	Balloon cuffing (as above) or sensitivity experienced at the bladder neck or within the urethra from the catheter	Good patient preparation and support throughout the procedure is essential so that the patient is relaxed and fully aware of what to expect. Inserting anesthetic (lignocaine) gel into the drainage port of the catheter 3-5 minutes prior to removal can reduce sensitivity at the bladder neck. It should be noted that more than 2-3 ml will need to be used as this volume will remain within the catheter (40).

If you experience any product failure or difficulties it is important that the manufacturer is contacted and informed of the problem.

5.1.4 Potential problems following removal of the catheter

Problem	Cause	Suggested Action
1. Frequency and Dysuria	Inflammation of the urethral mucosa.	Ensure a fluid intake of 2-3 litres per day. Advise the patient that frequency and dysuria is common but will usually be resolved once micturition has occurred at least three times. Inform medical staff if the problem persists.
2. Retention of urine	Inability of the bladder to empty. Patient anxiety.	Encourage the patient to increase fluid intake. Offer the patient a warm bath to promote relaxation. If unsuccessful perform a bladder scan (if the equipment is available) and inform medical staff if the problem persists as the patient may require re-catheterization.

Problem	Cause	Suggested Action
3. Urinary tract infection	Bacteruria, resulting in frequency and dysuria	Encourage a fluid intake of 2-3 litres a day to promote flushing of the bladder. Collect a specimen of urine if symptoms persist and inform medical staff. Administer prescribed antibiotics.

Additionally, there may be small amounts of blood at the start, throughout or at the end of the patient's urine stream. The patient may feel the urge to urinate and not get to the container or bathroom in time. Dribbling may also occur. These problems should subside within several days.

When the catheter has been removed, and advice on life style (e.g., drinking, etc.) has been given, make sure the patient understands he can contact you or your colleagues at any time if or when problems occur.

6. SUMMARY

This document has been put together to support the practice of male catheterization for the skilled Healthcare Professional in Europe. It should be emphasized that this document should only be used in conjunction with local policies and protocols.

Apart from providing a theoretical basis which is essential in identifying potential complications associated with the procedure, the document has also tried to encourage the healthcare professional to have a clear vision of the needs of the patient during this procedure, looking at the physical and psychological impact.

The key points are:

- Choose the right catheter type (22) and material after undertaking a thorough patient assessment
- Ensure your patient is well informed (24) and understands what is going to happen and why it is necessary
- Gain the patient's verbal consent before commencing the catheterization (21)

Ongoing reassurance throughout the procedure is essential, and effective urethral lubrication using an anesthetic gel is a key factor for a successful outcome. Monitor and note any difficulties that occur during insertion of the catheter, if any occur, act according to local policy/protocol.

Identification and management of problems is essential when caring for patients with indwelling catheters. It should be noted that:

- Antibiotics should not be given on a standard basis; bacteriuria is very often present in patients who have a catheter in-situation for more than 5-7 days; treatment is therefore only necessary when patient becomes symptomatic.

- Disconnection of the closed drainage system increases the risk of introducing bacteria into the urinary tract and should be discouraged.

- Cranberry juice may have a role in the prevention and management of bacteuria. Caution is advised in case of patients using anti-coagulantia.

- A Catheter Diary can be useful to monitor problems, record interventions and evaluate care.

In the past male catheterization was often seen as a procedure that was performed only by male staff, however holistic patient care ensures we promote this as a skill that can be learned and then undertaken by all health care professionals, regardless of gender. To support safe, effective practice it is vital that appropriate education and training is provided to ensure the practitioner has a clear understanding of the normal urethral anatomy, and the potential problems and complications that may be encountered. In conclusion it should be noted that male catheterization is usually a straightforward procedure that can offer the patient an improvement in symptoms, and in some situations a clear improvement in overall quality of life.

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8. ABBREVIATIONS USED IN THE TEXT

Ch	Charrière
FG	French gauge
PVC	Polyvinyl chloride
UTI	Urinary tract infection

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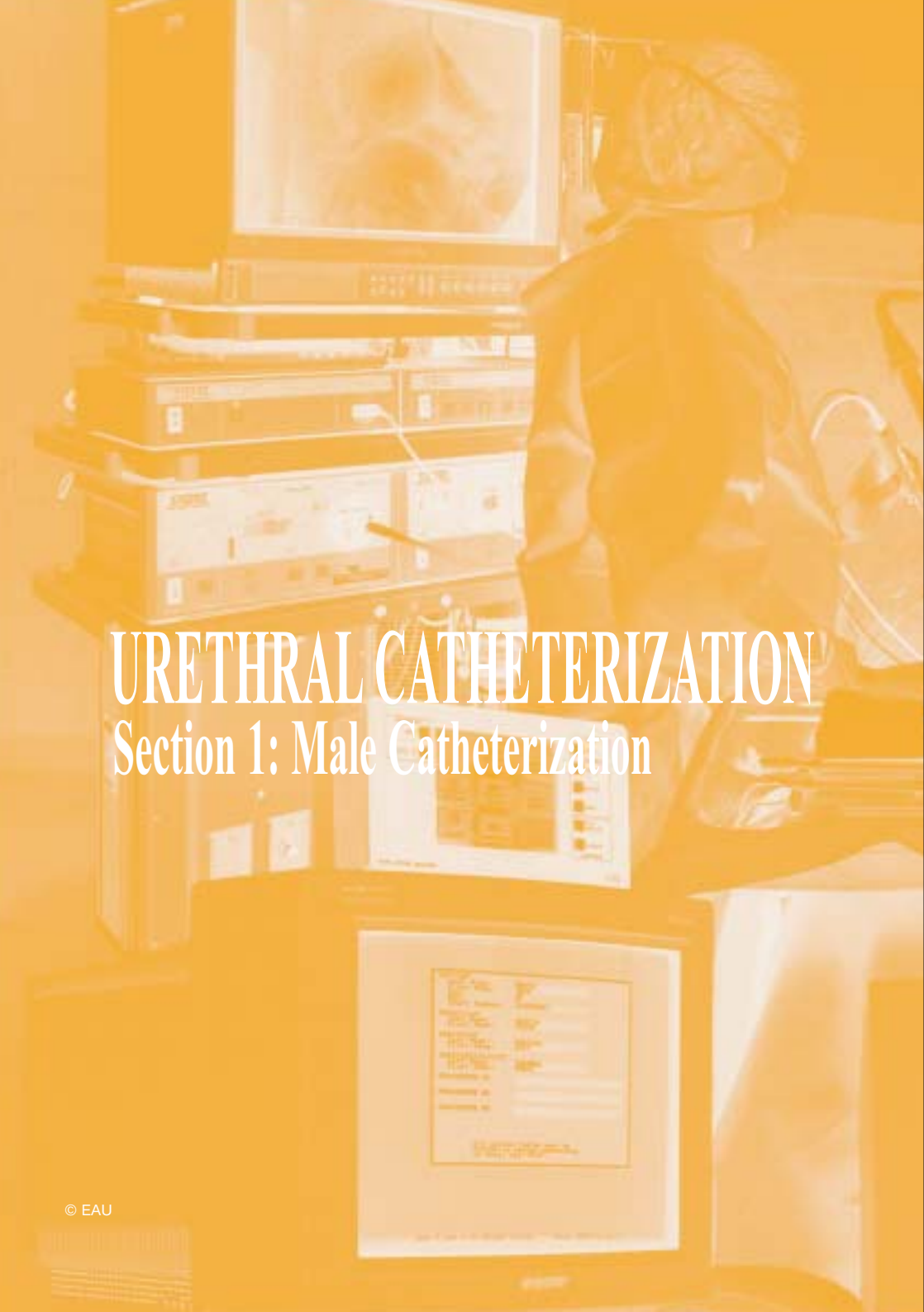

URETHRAL CATHETERIZATION

Section 1: Male Catheterization