SECTION 12.1 URINARY CATHETERS

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**Urinary Catheterisation**

Urinary catheterisation is defined as an intervention to enable the emptying of the bladder by insertion of a catheter. Catheters can be short term less than 28 days or long term more than 28 days.

Indwelling devices provide a route for infectious agents to enter the body. Thus promotion of continence is the preferred method of dealing with incontinence. It is important to try to avoid urinary catheterisation in the best interest of prevention of healthcare-associated infection (HCAI). Catheterisation should never be used solely for the management of urinary incontinence and should only be undertaken after careful assessment.

Urinary tract infections (UTI’s) are common in old age and in residents/clients with dysfunction of the bladder or urethra. The risk of infection is greatly increased by urinary catheterisation, particularly the use of long term indwelling catheters or repeated catheterisation. Indwelling urethral and supra-pubic catheters bypass the body’s natural defence mechanisms and provide a route for micro-organisms to enter the urinary tract and bladder (HPSC/SARI 2011).

**Prevalence of Infections**

- Urinary tract infections (UTI’s) have been shown to be one of the most common HCAI with up to 80% related to the presence of an urinary catheter (HPSC/SARI 2011).
- Irish data from a 2006 point prevalence study in acute hospitals found the most common HCAI are UTI’s accounting for 22.5% of HCAI’s, of which 56.2% were catheter related (HPSC/SARI 2011).
- In Ireland using the HALT point prevalence study 2011 4.1% of 5,930 residents in long term care facilities had a healthcare associated infection of which urinary tract infections accounted for 1.4%. On the day of the point prevalence study 6% of residents had an indwelling urinary catheter (HPSC/SARI, 2011).

The following Summary of Recommendations have been taken from 'Guidelines for the Prevention of Catheter-associated Urinary Tract Infection'(HPSC 2011).

**Summary of Recommendations**

**A. Implementation of these guidelines**

- The Department of Health and Children (DoHC) and the Health Service Executive (HSE) must prioritise prevention of healthcare-associated infection (HCAI) in order to improve patient care and reduce all HCAI including those associated with urinary catheters.

**B. Implementation in each healthcare facility**

- Each healthcare facility should ensure that these guidelines (Guidelines for the Prevention of catheter-associated Urinary Tract Infection) are incorporated into local guidelines and procedures on preventing catheter associated urinary tract infection (CAUTI).
C. **Avoid urinary catheterisation**

- Use an external catheter (e.g., condom system) in preference to urinary catheterisation, if clinically appropriate and a practical option.
- Limit the use of urinary catheters to carefully selected patients and leave in place only as long as it is required.

D. **Indications for catheterisation**

Indications for catheterisation include the following:

- To relieve acute urinary retention or bladder outlet obstruction.
- To assist healing of an open sacral or perineal wound.
- To assist in achieving patient immobilisation e.g., required for unstable thoracic or lumbar spine or pelvic fractures.
- To monitor urinary output (e.g., in critically ill patients or when a patient is unable or unwilling to collect urine).
- For patient comfort during end of life care.
- During prolonged surgical procedures with general or spinal anaesthesia.
- During regional analgesia for labour and delivery.
- To allow instillation of drugs.
- As an exception, at patient request to improve comfort.

E. **Method of catheterisation**

- Intermittent catheterisation should be used in preference to an indwelling catheter if it is clinically appropriate and a practical solution.
- The selection of either suprapubic or urethral catheterisation should be made on an individual patient basis.

F. **Type of catheter**

- Use a catheter with the smallest gauge suitable for the patient’s needs.
- Choose a catheter of appropriate length to ensure patient safety and comfort.
- Selection of catheter material should be based on an assessment of the individual patient’s requirements, history of encrustation if applicable and the clinician’s preference.
- Consider using antimicrobial/antiseptic-impregnated catheters if the CAUTI rate is not decreasing following implementation of a multi system approach including optimisation of aseptic technique, appropriate management of catheters and regular audit and feedback.

G. **Insertion of urinary catheters**

- Healthcare care workers (HCWs) must apply Standard Precautions when inserting and managing urinary catheters with particular reference to hand hygiene and personal protective equipment.
- Antiseptic hand hygiene should be performed immediately before insertion of the catheter and before and after any manipulation of the catheter site or apparatus, even when sterile gloves are used.
- HCWs should use sterile gloves and aseptic technique when inserting urethral, suprapubic and intermittent catheters.
• HCWs who insert urethral, suprapubic and intermittent catheters should be trained and assessed as competent in aseptic and insertion technique or be undertaking the procedure under appropriate supervision.
• Clean technique should be used for self intermittent catheterisation.
• Sterile saline or water, or an antiseptic solution should be used to cleanse the urethral meatus.
• The indication for and insertion of a urinary catheter should be clearly documented and signed in the patient’s record.

H. Management of short-term and long-term indwelling urinary catheters

• Healthcare workers (HCWs) must apply standard precautions when caring for patients with a urinary catheter in situ.
• A closed drainage system should be used for all patients.
• Using a pre-connected urinary catheter and drainage may reduce CAUTI.
• The drainage bag should be maintained below the level of the bladder and secured to the leg (leg bag) or a catheter stand to avoid contamination of the drainage tap.
• Empty the drainage bag regularly using a clean container for each patient. Avoid touching the drainage tap with the container.
• Single use sterile drainage bags (including night drainage bags) should be used with indwelling urinary catheter drainage systems.
• The meatal area and suprapubic insertion site (once healed) should be cleaned daily using soap and water.
• Assess the catheter drainage system only when absolutely necessary (i.e., changing drainage bag as per manufacturer’s instructions).
• Catheter irrigation should not be undertaken to prevent infection. If required for other purposes (e.g., post surgery) a closed continuous irrigation system should be used.
• An aseptic technique should be used for intermittent irrigation (e.g., flushing or instillation of drugs).
• Catheter specimens of urine should only be taken from the drainage tubing sampling port using a non touch technique and preferably a needleless system.

Additional recommendations for the management of long term indwelling catheters

• An individual care regime designed to minimise the problems of blockage and encrustations should be implemented.
• If use of catheter maintenance solutions (CMS) is being considered, they must be prescribed on an individual patient basis. An aseptic technique should be used during instillation and a new sterile drainage bag attached after the procedure.
I. **Removal of indwelling catheters**

**Short-term catheters**
Ensure indwelling catheters are removed promptly when no longer required by using some or all of the following.
- Daily review by nursing and medical staff.
- Implementing a procedure specific guideline for post operative catheter removal.
- Placing reminders into the patient’s chart or the electronic patient record if available.

**Long-term catheters**
- Regularly review the need for long-term catheterisation.
- Change catheters used for long term catheterisation as per the manufacturer’s instructions and individual patient requirements (e.g., before blockage occurs or is likely to occur).

J. **Antibiotic prophylaxis**
- There is no role for routine antibiotic prophylaxis in patients with urinary catheters.
- Prophylactic use of antibiotics upon change or instrumentation of urinary catheters (both short and long term) are not indicated in the majority of patients.

K. **Surveillance**
- Healthcare facilities should consider including CAUTI surveillance as a component of their surveillance programme depending on the risk profile of their patients and staffing resources available.
- The Following should be considered if CAUTI surveillance is undertaken:
  - The Centre for Disease Control and Prevention (CDC) definition for CAUTI is recommended for use.
  - Standardised methodology should be used and CAUTI rates should be expressed as the number of CAUTIs per 1000 urinary catheter days.
  - CAUTI rates must be fed back to the relevant personnel and the management of the healthcare facility on a regular basis and at least quarterly.

L. **Care Bundles**
- Multidisciplinary teams in conjunction with infection prevention and control committees should consider implementing a locally adapted care bundle for the management of indwelling urinary catheters.

M. **Education of healthcare workers**
- An education programme should be available at induction for new staff and on a regular basis for HCWs that includes the following;
  - Indications for catheterisation.
  - Insertion technique.
  - Maintenance of the catheter system.
  - Obtaining a urine specimen.
  - Signs and symptoms of infection.
- Catheter removal.
- Attendance records for education sessions should be maintained

**N. Patient education**

- Patients should be informed using both written and verbal information of the benefits and risks of urinary catheterisation before insertion. This information should include:
  - Catheter care.
  - Emptying the catheter bag.
  - Where and when the catheter and catheter bag will be changed.
  - Signs and symptoms of complications (e.g., infection, leakage, blockage) and who to contact should complications develop.

- An example of a resident/client information leaflet is provided in appendix 11.1.2.

**Storage of urinary devices**

Catheters should be maintained sterile and stored lying flat, on a shelf off the ground and away from direct heat and sunlight in their original packaging. Check all catheters for quality and expiry date and ensure that the integrity of the packaging prior to use.

**References**

Guidelines for the Prevention of Catheter-associated Urinary Tract Infection, Published on behalf of SARI by HSE Health Protection Surveillance Centre 2011.
Appendix 12.1.1 Diagnosis & Management of UTI in Long Term Care Residents > 65 years

Diagnosis & Management of Urinary Tract Infection (UTI) in Long Term Care Residents > 65 years

**KEY MESSAGES**

- Diagnosis of UTI in residents > 65 years requires a combination of reliable clinical signs and symptoms AND a positive urine culture result.
- Only perform urine dipstick testing or send urine for culture in patients who are symptomatic. Do not perform urine dipstick testing or send urine for culture solely on the basis of urine odour or appearance.
- Residents in long term care facilities have high rates of abnormal dipstick and urine test results WITHOUT infection necessarily being present. Antibiotic therapy in these cases does not reduce mortality or prevent symptomatic episodes, rather it increases side effects and leads to antibiotic resistance.
- **DO NOT ROUTinely USE ANTIBIotic PROphylaxis TO PREVENT URINARY TRACT INFECTION**

### 1: SIGNS AND SYMPTOMS OF UTI

- Diagnosis of UTI should be based on a full clinical assessment.
- Symptoms & signs suggestive of urinary tract infection include:
  - Dysuria
  - Frequency
  - Urgency
  - New onset incontinence
  - Fever >38°C
  - Suprapubic tenderness
  - Haematuria
- In patients with a urinary catheter loin pain and fever >38°C are significant indicators of a UTI.
  - **DO NOT SEND URINE FOR CULTURE IF THERE ARE NO SIGNS AND SYMPTOMS OF UTI!!**
- Dipstick urine testing is NOT a reliable way to diagnose UTI. Do not perform dipstick urinalysis if patients are asymptomatic or if a urinary catheter is present as false positives will occur.
- Empiric treatment may be considered in a SYMPTOMATIC patient with a positive dipstick. A urine sample should be sent to the microbiology laboratory for culture and antimicrobial susceptibility testing in these cases.

### 2: HOW TO INTERPRET URINE CULTURE RESULTS IN RESIDENTS WITHOUT A URINE CATHETER

**Microscopy**

**White Cells**
- No white cells present indicate no inflammation therefore culture result is unlikely to indicate UTI.
- White cells ≥100/µL are considered to represent inflammation.

**Epithelial cells/mixed growth**
- Presence indicates perineal contamination and therefore culture result is unlikely to indicate UTI.

**Red Cells**
- May be present in UTI, patients with persistent hematuria post UTI should be referred.

**Culture**
- Single organism ≥ 10,000 (10³) colony forming units (CFU)/mL OR
  - ≥ 100,000 (10⁵) mixed growth with one predominant organism OR
  - *Escherichia coli* or *Staphylococcus saprophyticus* ≥ 1,000 (10³)CFU/mL
  - Usually indicates UTI but only in patients with symptoms

**Positive culture/microscopy result and no symptoms = bacteriuria, not infection and does not require antibiotic treatment.**
Appendix 12.1.1

- Laboratory microscopy should not be used to diagnose UTI in catheterised patients as urine white cells are often elevated due to the presence of the catheter.
- If the urine culture result is positive (see section 2) treat only if the resident has symptoms or signs suggestive of UTI and no other source is identified.
- In the presence of a urinary catheter antibiotics will not eradicate bacteriuria.

4: EMPIRICAL TREATMENT OF UTI IN RESIDENTS

- Only consider empiric antibiotic therapy in SYMPTOMATIC patients pending urine culture result.
- Choice of empiric therapy should be guided by local resistance rates where available.
- Modify treatment according to culture result when available.
- For treatment of uncomplicated UTI in patients < 65, please refer to page 9 of the National Guidelines for Antimicrobial Prescribing in Primary Care in Ireland (2011)²

4a: EMPIRICAL TREATMENT OF UTI IN RESIDENTS WITHOUT A URINARY CATHETER

Uncomplicated UTI i.e. no fever or flank pain, first presentations / low risk of resistant organisms

- Trimethoprim 200mg BD
- OR Nitrofurantoin* 50-100mg QDS
  (*Avoid in renal impairment)
  For 7 days

Use of Cephalexin 500mg BD or Co-amoxiclav 500/125mg TDS may also be considered - based on local resistance rates

Acute pyelonephritis

- Co-amoxiclav 500/125mg TDS for 14 days
- OR Ciprofloxacin 500mg BD for 7 days
- If no response within 24 hours consider hospital referral

4b: EMPIRICAL TREATMENT OF UTI IN RESIDENTS WITH A URINARY CATHETER

First presentations / low risk of resistant organisms

- Trimethoprim 200mg BD
- OR
- Nitrofurantoin 50-100mg QDS
  (*Avoid in renal impairment)

Duration of therapy

- Prompt resolution of symptoms: 7 days
- Delayed response (regardless of whether patient remains catheterised or not): 10-14 days

If an indwelling catheter has been in place for >2 weeks at the onset of UTI and is still indicated, the catheter should be replaced.

Previous resistance to, or risk of, trimethoprim or nitrofurantoin resistance

- Cephalexin 500mg BD
- OR
- Co-amoxiclav 500/125mg TDS
  (Consider based on local resistance rates)

5: ANTIBIOTIC PROPHYLAXIS

DO NOT ROUTINELY USE ANTIBIOTIC PROPHYLAXIS TO PREVENT URINARY TRACT INFECTION

Antibiotic prophylaxis is not recommended for the prevention of symptomatic UTI in catheterised patients.

Antibiotic prophylaxis is not recommended for urinary catheter changes unless there is a definite history of symptomatic UTIs due to catheter change.

Antimicrobial prophylaxis may be considered in patients for whom the number of urinary infections are of such frequency or severity that they chronically impinge on function and well-being.

REFERENCES

1: Available at [http://www.hpsc.ie](http://www.hpsc.ie)
Appendix 12.1.1


Nicolle LE, Mayhew WI and Bryan L. Prospective randomized comparison of therapy and no therapy for asymptomatic bacteriuria in institutionalized elderly women. The American Journal of Medicine 1987;83:27-33.


Appendix 12.1.2 Information Leaflet Urinary Catheters: Your Questions Answered

Urinary Catheters
Your Questions Answered.

What is a urinary catheter?
A urinary catheter is a small, soft hollow tube which is inserted into the bladder. It usually goes into the bladder by the same route that urine comes out.

Holes at the top of the tube allow urine to flow through the tube.

The end of the tube is fitted to a catheter drainage bag which collects the urine. The catheter is held in place in the bladder by a small balloon filled with water.

Why is a urinary catheter needed?
The following are the most common reasons why a urinary catheter is needed:

• There is a blockage in the system from where urine usually flows out.
• There is a risk of urine leaking onto a wound in the buttock area which may delay healing of the wound.
• The bladder is not empty completely when urine is passed.
• It is important to watch closely how much urine is being produced.
• Surgery is planned which is going to last a long time.
• During labour/delivery, when an epidural is used.
• It is necessary to put drugs into the bladder.
• To provide comfort for the very ill patient.
Appendix 12.1.2 Information Leaflet - Urinary Catheters: Your Questions Answered

Urinary Catheters Your Questions Answered.

Care of a Urinary Catheter

Personal hygiene is very important to reduce the risk of getting a urinary tract infection.

- Always wash your hands after touching your catheter.
- Wash the area where the catheter enters the body gently with soap and water daily and after you have a bowel motion (if possible have a daily shower/bath).
  - Men should always pull back the foreskin and clean the whole area. When cleaning is finished, it is very important that the foreskin is returned to its normal position.
  - Women should always clean with single strokes from front to back.
- When cleaning the catheter tube always wash away from your body using downward strokes.
- Avoid using talc or perfumed soap which may cause irritation.

What problems may occur?

Infection and catheter blockage can occur.

Signs of infection may include, feeling unwell, a high temperature, change in the smell of the urine, cloudy urine.

Pink/rose coloured urine could be caused by blood as a result of infection or trauma from the catheter being inserted or pulled.

You should call your nurse or doctor if you notice any of the following:

- A high temperature.
- Feeling unwell.
- Pain in your lower abdomen or where the catheter comes out.
- Cloudy, blood stained or offensive smelling urine.
- No urine passed in over four hours.

Care of the drainage bag

The catheter is usually connected to a catheter drainage bag. The bag is either attached to your leg (leg bag) with elasticated/Velcro straps or to a bag which is attached to a catheter stand.

- The bag should be emptied regularly. If overfull it can pull on the bladder and can cause irritation.
- The catheter and bag together should only be disconnected when the bag is being changed, usually once a week.
- A large drainage bag can be connected to a leg bag at night to prevent the leg bag over filling.
- Keep the bag below the level of the bladder to prevent urine flowing back up into the bladder.
- Do not allow the catheter bag or opening port to touch the floor.

Emptying the drainage bag (when approximately 2/3rds full)

1. Wash your hands.
2. Open the tap at the end of the bag and empty into a toilet or a clean container.
3. Wipe the tap clean, and close securely.
4. Flush toilet or empty the container into the toilet and flush.
5. Wash the container with a household detergent and dry well.
6. Wash your hands.

If you have a problem please contact:

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www.hse.ie  www.hpsc.ie
Appendix 12.1.3 Aseptic Non Touch Technique (ANTT) Poster for Indwelling Urinary Catheterisation

Indwelling urinary catheterisation – male or female

Principles of ANTT: Protect key parts & sites at all times by:
- Risk assessment
- Non-touch technique
- Effective hand cleaning
- Using appropriate infection precautions

1. Clean hands
2. Clean trolley
3. Gather equipment
4. Apply apron
5. Open catheter pack
6. Open equipment
7. Clean hands
8. Prepare equipment
9. Apply aseptic field drapes
10. Clean urethral orifice with normal saline & gauze
11. Insert lubricating gel
12. Dispose gloves
13. Insert catheter
14. Inflate balloon
15. Attach collection bag
16. Dispose of waste & gloves
17. Clean hands
18. Clean trolley
19. Clean hands

www.antt.org.uk