Urinary catheter management - preventing and solving some common catheter associated problems.

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GOAL - Patient Safety

Provide information on:

- Prevention of Catheter-Associated Urinary Tract infections (CAUTI) or (CA-UTI)
- Catheter Care Bundle
- Key management points
Medical devices, such as indwelling urinary catheters - can cause Health Care Associated Infections (HCAIs) as they breach the body’s normal defence.

- UTI is one of the most common hospital-acquired infections: 70%-80% related to the presence of an indwelling urinary catheter (SHEA/IDSA 2014).

- HCAIs cost the NHS 1 billion a year.

- Approximately 300,000 NHS patients acquire a HCAI yearly (NICE 2012).
Between 12% and 16% of hospitalized patients have an indwelling catheter (SHEA 2014).

5-10% NH residents.

A US survey found > 50% did not monitor which patients were catheterised.

75% did not monitor duration and/or discontinuation (CDC 2009).

An estimated 17%-69% can be prevented with recommended infection control measures.
Catheterisation is associated with:

- Greater risk to patient safety
- Greater risk of urinary tract infection (most serious outcome)
- Unnecessary antimicrobial use
- Risk of antimicrobial resistance and Clostridium difficile infection in acute care.
- Increased risk of tissue damage / strictures/mechanical trauma
- Psychological discomfort
- Increased morbidity and mortality
- Increased use of healthcare resources
- Increased length of hospital stay 2-4 days
- Mobility impairment
CAUTI risks factors:

- Prolonged catheterisation – single most important factor
- Daily risk is 3%-7% (SHEA 2014)
- Breaks in the closed system
- Female sex
- Older age
- Impaired immunity
CAUTI prevention/reduction (1)

- Avoid catheterisation.

- 21-54% of catheters are placed for inappropriate reasons.

- Introduce a restrictive urinary catheter policy - limit use to carefully selected patients.

- Daily review need, remove when no longer clinically required.

- In suitable patients intermittent catheterisation is preferable to indwelling or suprapubic catheter.

CAUTI prevention /reduction (2)

- Avoid where possible in patients who are agitated or cognitively impaired.

- Use portable bladder scan to assess bladder volume.

- A no-tolerance attitude to avoidable HCAIs (NICE 2012).

- Insufficient data on benefits of placing pts with catheter or other invasive devices in different rooms (NICE 2012).
- Only trained healthcare workers to catheterise.
- Consent
- Hand hygiene
- Insert under aseptic technique
- Use sterile equipment
- Choose the smallest Ch/gauge that suits patient’s needs
- Secure catheter to avoid irritation/traction on bladder neck
- Use single use lubricant
- Maintain a sterile, continuously closed drainage system.
- Maintain unobstructed urine flow
- Take into account the patients needs and preference when choosing drainage system
- Use securement device
- Catheter insertion, changes and care should be documented.
CA-UTI

- If an indwelling catheter has been in place for more than 2 weeks at onset of CA-UTI and is still clinically needed, replace it and treat the patient if symptomatic for CA-UTI. Obtain a urine culture from the new catheter.

- If there is a break in aseptic technique, disconnection, or leakage occurs, replace the catheter and collection system using aseptic technique and sterile equipment (CDC 2009) (SHEA 2014).

- Silver alloy catheters used in hospitalised adults catheterised for less than one week significantly reduced the incidence of asymptomatic bacteriuria, (HSE SARI 2011).

- Silver nitrofurazone catheter use might be cost effective, however nitrofurazone is associated with greater patient discomfort (SHEA 2014).
Antibiotic?

- Do not offer antibiotic prophylaxis routinely.
- Consider for patients who have a history of symptomatic UTI after catheter change or experience trauma during catheterisation.
- Trauma is defined as frank haematuria after catheterisation or two or more attempts of catheterisation, (NICE 2012).
Indications for catheterisation

- Relieve acute urinary retention.
- To assist healing of an open sacral or perineal wound.
- To assist in achieving patient immobilization (e.g. unstable thoracic, pelvic or lumbar spine fractures).
- To monitor urinary output (in a critically ill patient).
- During prolonged surgical procedures with general or spinal anaesthetic.
- During regional analgesic for labour and delivery.
- To allow instillation of drugs or during urology investigation.
- For patient comfort care during end of life care (SARI 2011).
Care Bundle elements:

- Daily review continued clinical need, remove if no longer required.
- Urinary catheter has been continuously connected.
- Daily meatal hygiene is performed or, the patient is aware of his/her own role in minimising the risk of urinary tract infection.
- Clean container used to regularly empty urinary drainage bags as a separate procedure.
- Hand hygiene performed before and after each catheter procedure and, wear gloves and apron.
Have you ex......foley.....ated today?

Urinary Catheters ARE indicated for:
* Acute urinary retention or obstruction
* Perioperative use in selected surgeries
* Assist healing of perineal and sacral wounds in incontinent patients
* Hospice / comfort care/ palliative care
* Required immobilization for trauma or surgery
* Chronic indwelling urinary catheter on admission
* Accurate measurement of urinary output in the critically ill patients (intensive care)

Foley Catheters are NOT indicated for:
* Urine output monitoring OUTSIDE intensive care
* Incontinence (place on toileting routine, change frequently)
* Prolonged postoperative use
* Patients transferred from intensive care to general units
* Morbid obesity
* Immobility (turn patient q 2 hours, up in chair)
* Confusion or dementia
Review need daily

- Remove when no longer clinically required.

- Use of reminder or stop orders - was found to reduce the rate by 52% and duration of catheterisation by 37%.

- Implementation of a care bundle in a medical ICU showed a reduction of catheter associated UTI’s from 6.23/1000 device days to 0.63/1000 device days, (HSE (hpsc) SARI 2011).
By using a closed system the risk of symptomatic infection reduced from 97% to 8-15% (Pratt et al 2001).
Hand hygiene:
The 5 moments of hand hygiene, recommends health-care workers to clean their hands
1. before touching a patient,
2. before clean/aseptic procedures,
3. after body fluid exposure/risk,
4. after touching a patient, and
5. after touching patient surroundings, World Health Organisation (WHO)
It's OK to ask me if I washed my hands!
Patient education leaflet

- Urinary Catheters - Your Questions Answered (www.hpsc.ie).
Catheter by-passing/blocked

**Mechanical obstruction?**
- Kinked tube?
- Is drainage bag full, needs to be emptied?
- Tight or restrictive clothing?
- Is the bag valve occluded?
- Bladder spasm due to incorrect position of drainage bag?
- Position catheter bag 30cm below the level of the bladder supported on a floor stand/or bed stand.

**Physical causes?**
- Bladder spasm? Consider anticholinergic
- Constipation/faecal impaction? Rx
- Incorrect size of catheter e.g. Ch/gauge too big? Use the smallest gauge clinically possible to minimize urethral trauma, mucosal irritation and residual urine.
- Review catheter material used. If the patient has a known latex allergy use a silicone catheter.
- Urinary tract infection? check urine odour/colour/consistency.
- Generally a 10ml balloon catheter is used for adults.
- Bladder pain- avoid constipation, consider anticholinergic medication.
Encrustations

- Recurrent blockage caused by encrustations of the catheter from deposits of mineral salts is a complication in 50% of all long term catheterised patients, blockages can occur within a few days to a few weeks.

- Encrustations form when a specific bacteria in the urine produces an enzyme called urease e.g. the bacteria Proteus Mirabilis.

- Not all people with an indwelling catheter will develop stones or encrustations. Stones form mainly in alkaline urine.

- Examination of the catheter lumen on removal may reveal deposits within the lumen, on the outer surfaces of the tip or on the balloon.

- Vit C – significantly increases the acidity of the urine - making it difficulty for bacteria to thrive in.
Management of encrustations (1)

- Check daily fluid intake
- Increase catheter diameter
- Introduce catheter and bladder washouts
- Increase frequency of catheter changes to meet patient needs.
- Develop a patient-specific care plan to anticipate when blockage may occur and plan catheter change.
- Ref patients with regular blockages to urology for further investigations (BJUI 2010).
- Intermittent drainage every 2-4 hours reduces the rate of blockages.
Management of encrustations (2)

- Document catheter blockages and changes.
- All catheter interventions increase the risk of infection by disrupting the closed system.
- For some patients bladder instillation with a Catheter Maintenance Solutions (CMS) may be needed, these solutions contain citric acid which aims to increase catheter life.
- The CMS can potentially cause an inflammatory tissue reaction.
- The CMS needs to be prescribed.
- An aseptic technique should be used for instillation and a sterile drainage bag attached after the procedure.
- Silicone catheter might reduce the risk of encrustation in long-term catheterised patients who frequently obstruct (CDC 2009). *Silicone is more rigid and prone to cuffing making it more difficult to remove.
Good daily fluid intake

- There is no standard amount of advised daily fluid intake.
- Ensure it is adequate to prevent:
  - Concentration of urine
  - Promote flow of urine and
  - Prevent blockage.
  - To maintain an output of 50-100ml/h.

- The amount needed will vary and depends on patient’s:
  - Body mass
  - Amount of fluid loss
  - Food intake
  - Circulatory and renal status.

  (EAUN 2012)
Use correct Charriere (Ch)

Use of large Ch/gauge may cause:

- Urethral trauma.
- Bladder spasm/bypassing.
- Residual urine which may predispose to CAUTI.
- Erosion of the bladder neck and urethral mucosa.
- Inadequate drainage of the peri-urethral glands causing build-up of secretions leading infection and irritation.
- Irritation/discomfort.
Correct deflation of catheter balloon

- Follow manufacturers instructions.
- Gently insert leur slip tip syringe in the catheter valve.
- Never use more force than is necessary to make the syringe stick in the valve.
- Allow the pressure within the balloon to force the plunger back and fill the syringe.
- If you notice slow or no deflation, re-seat the syringe gently.
- Use only gentle aspiration to encourage deflation if needed.
- Vigorous aspiration may collapse the inflated lumen, preventing balloon deflation.
Non-Deflating balloon (rare)

- Non-deflation balloon?
- Remove syringe and try a different one.
- Leave the syringe attached for 15-20 minutes.
- Check for kinked catheter or constipation.
- Do not attempt to burst the balloon.
- Do not cut the catheter during removal.
- Seek medical advice.
Daily meatal hygiene

- Attend to catheter hygiene daily as part of daily hygiene and after bowel movement with mild soap and water unless patient allergic to soap.

- Cleanse females from front to back.

- The suprapubic insertion site (once healed) should be cleaned daily with warm soapy water (unless allergic to soap).

- Avoid use of talcum powder and or ointment in contact with the catheter, as some ointments (e.g. petroleum jelly) can damage the catheter.
Urinary Catheters Lengths

*Use the correct length - the shorter female length catheter can cause severe trauma and haemorrhage if used in males*

- Standard length catheter:
  - 40-45cms (for male and female patients).

- *Female length catheter*:
  - 20-26cms (obese or chair bound females may need a standard length catheter, i.e. 40-45cms)

- Paediatric length catheter:
  - 30-31cms for paediatric patients.
Balloon size

- Over or under inflation can cause:
  - Occlusion of drainage eyes,
  - Irritate the bladder wall, and
  - Lead to bladder spasm and
  - Larger balloons have the potential to increase residual volume.
- Some manufacturers have an integrated balloon – can be an advantage on removal.
When to change drainage bag and catheters

- Change catheters when clinically necessary or according to the manufacturers instructions (NICE 2012).

- Replace the catheter and collection system using aseptic technique when breaks in aseptic technique, disconnection, or leakage occur (SHEA/IDSA) 2014.

- Changing catheters or drainage bags at routine, fixed intervals is not recommend, (CDC 2009) (CID 2009).
Securement device (1)

- Their use is not proven though may help to prevent trauma to and irritation of the urethra.
- The use of elasticated/velcro straps should be used with caution in patients with Peripheral Vascular Disease (PVD).
- Regular assessment is necessary to avoid skin irritation from excess traction and or irritation from the device. – remove immediately if skin becomes irritated and do not re-site.
- The suprapubic catheter emerges at right angles to the abdomen and needs to be secured in this position.
Securement device (2)

- Devices may be either adhesive or non adhesive, positioned on thigh or abdomen.
- Use the one that the patient finds the most suitable.
- Change as per manufacturers instructions or sooner if issue observed.
- Rotate and change site regularly.
- Verbal and written (manufacturers) instructions on how to apply and remove the catheter securement device should be given to the patient/family/carer.
References:

- CQUIN Urinary Catheter (2015)