

Safety flows  
through

*me*

HAI and CAUTI









# HAIs and CAUTI

At BD, just like you, we believe there should be no compromises when it comes to health.



**BD**

Advancing the  
world of health



# Healthcare Acquired Infections (HAIs)

## Nosocomial

- A healthcare-acquired infection (HAI), also known as a nosocomial infection, is an infection that is acquired in a hospital or other healthcare facility.<sup>1</sup>
- "Hospital acquired infections are a huge problem for the NHS. They prolong patients' stays in hospital and, in the worst cases, cause permanent disability and even death."<sup>2</sup>

nosocomial

no-suh-kow-mee-uhl

**ADJECTIVE** *medicine*  
(of a disease) originating  
in a hospital

## Definition CAUTI – CDC (US)

- A urinary tract infection (UTI) is an infection involving any part of the urinary system, including urethra, bladder, ureters, and kidney.<sup>3</sup>
- UTIs are the most common type of healthcare-associated infection reported.<sup>3</sup>
- The most important risk factor for developing a catheter-associated UTI (CAUTI) is prolonged use of a urinary catheter.<sup>3</sup>
- Among UTIs acquired in the hospital approx. 75% are associated with a urinary catheter.<sup>3</sup>

1. [https://en.wikipedia.org/wiki/Hospital-acquired\\_infection](https://en.wikipedia.org/wiki/Hospital-acquired_infection)

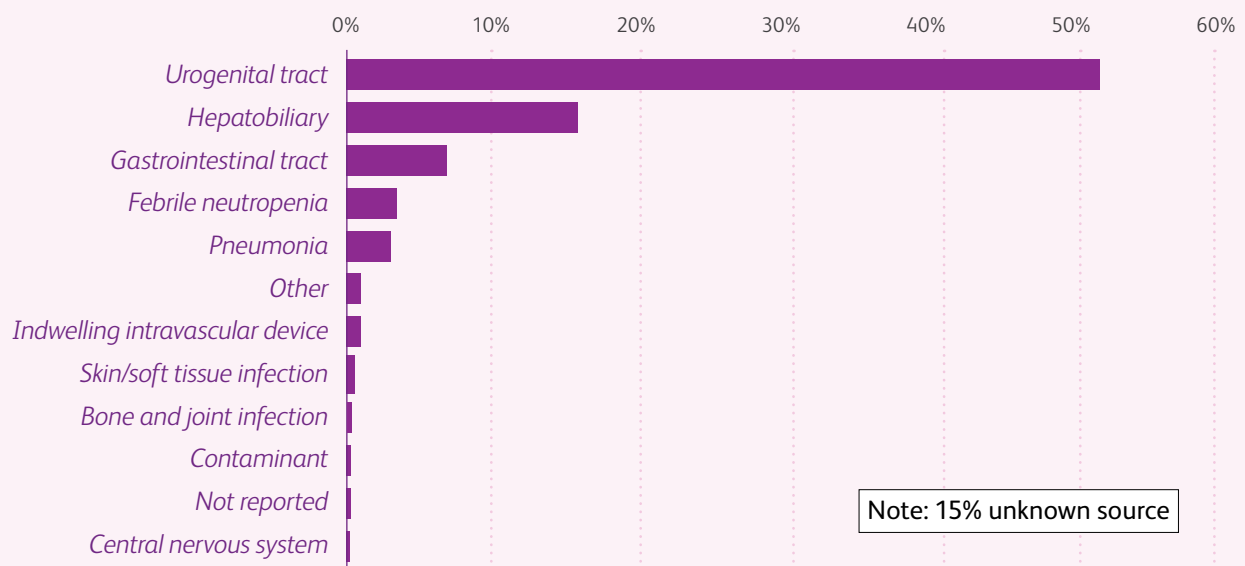
2. Sir John Bourne, NAO, 17 February 2000 - <https://www.nao.org.uk/report/the-management-and-control-of-hospital-acquired-infection-in-acute-nhs-trusts-in-england/>

3. CDC 2017 [https://www.cdc.gov/hai/ca\\_uti/uti.html](https://www.cdc.gov/hai/ca_uti/uti.html)

## Prevalance - Preventing HAI Gram Negative Blood Stream Infections<sup>4</sup>

- *E.coli* represents 55% of all gram negative BSIs.
- 51.2% of *E.coli* BSIs are from the urogenital tract.
- 45% of *E.coli* BSI's are from UTIs.
- 70 out of every 100,000 people will acquire an *E.coli* BSI.
- 568 of every 100,000 elderly females will acquire an *E.coli* BSI.
- Each individual *E.coli* BSI prevented can potentially save £900 - £2400 per patient.

## Sources of *E.coli* bloodstream infections<sup>4</sup>



### Focus of infection

Urinary tract or catheter associated urinary tract.

### Suggested guidance/action<sup>4</sup>

- Bladder scanners.
- Urinary catheter high impact intervention.
- Catheter passports.

Appropriate recognition and treatment of urinary tract infections.

# Key Insights & Guidelines

- UTI is the most common HAI accounting for 19% of HAIs with between 43% and 56% of those associated with a urinary catheter.
- 15–25% of patients will have a catheter during their hospital stay.
- Bacteriuria is present in 30% of catheterised patients after 2–10 days
  - 24% of those will have a CAUTI.
  - 3.6% of those with a CAUTI will develop a life threatening bacteremia or sepsis.
- Bladder scanners reduce the use of catheters 5–15%.



## Epic 3 CAUTI Prevention Key Insights<sup>5</sup>

- CAUTI is associated with prolonged hospitalisation, readmission and mortality.
- CAUTI costs the NHS £99m (\$130m) a year and a cost of £1,968 per episode.

### Commentary

- "Sealed (e.g. taped, pre-sealed) drainage systems contribute to preventing bacteria."
- "The risk of infection reduces from 97% in an open system to 8–15% in a closed sterile system."

## Epic 3 CAUTI Prevention Guidelines<sup>5</sup>



- Insert appropriately – aseptic trained staff, cleanse meatus with sterile saline, use an anaesthetic or lubricant gel.
- Maintain – don't break closed system, bag below bladder, reminder systems/stop orders, secure the catheter.
- Remove when not clinically indicated.
- Educate all users.
- Assess need – clinically indicated, following assessment of alternatives.

- Catheters should only be used after all alternatives have been considered.
- “Maintain a closed urinary drainage system as it is essential to avoid patients acquiring a CAUTI”.
- It is important to minimise the use and duration of urinary catheterisation in all patients, but especially those at higher risk for CAUTI-related morbidity and mortality such as:
  - Women.
  - The elderly.
  - Individuals with impaired immunity.
- A catheterisation procedure essential equipment list is included.



## RCN Catheter Care Prevention Key Insights<sup>6</sup>

## RCN Catheter Care Prevention Guidelines<sup>6</sup>



- Maintain a closed urinary drainage system as it is essential to avoid the patient acquiring a CAUTI.
- When a catheter is already being used the health care provider should consider if it is necessary. This can be established using the HOUDINI<sup>7</sup> (Adams *et al*, 2012) indicators.

- If the catheter is necessary, consider the following questions to minimise the risk of infection and complications:
  - Has hand washing/general hygiene advice been given to patient?
  - Is a closed system being maintained?
  - Is the catheter secured to the patient’s body to prevent urethral tension?
  - How secure is it? And is it the most appropriate device?
  - Is the bag secured below the level of the patient’s bladder?
  - Is the tubing from the catheter to the bag free of dependent loops?
  - Is a catheter bag stand in use which prevents the bag from touching the floor?
  - Does the patient have an individual measuring device?
  - Is the meatus washed daily with non-perfumed soap and water?
  - Which member of staff will be responsible for emptying/changing the bag? Have they been trained appropriately?

H

Haematuria

O

Obstructed

U

Urologic surgery

D

Decubitus ulcers – open sacral or perineal sore in an incontinent person

I

Input/output monitoring

N

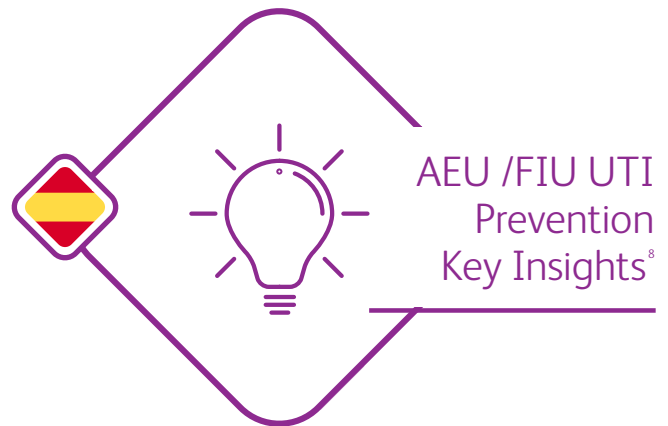
Not for resus/ end of life care – comfort

I

Immobility due to physical restraints.

## The Prevention of UTI related to the use of urinary catheters - AEU /FIU July 2020

- CAUTIs represent more than 30% of HAIs
- The daily incidence of bacteriuria in catheterised patients is approximately 3–10%.
- Among patients with bacteriuria, up to 25% will develop symptoms of local urinary tract infection, around 3% will develop bacteriemia.
- Thus, the fatality rate for UTI-associated bacteremia is approximately 13% among seriously ill patients at greatest risk
- The use of urinary catheterisation for management of incontinence should be avoided.



- For an incontinent patient, the use of incontinence pads or urinary collectors is recommended to avoid the risk of urinary tract infection.
- Consider alternatives to long term indwelling urinary catheters before insertion.

## AEU /FIU UTI Prevention Guidelines<sup>8</sup>



Among the detailed recommendations are:

- Latex-free 100% silicone urinary catheter
- Urinary catheter with lubricious coating on silicone substrate.
- Stabilisation/securement device for the catheter.
- "The use of preconnected drainage systems is recommended so as to reduce the risk of disconnections where the catheter is preconnected to the drainage bag in a sterile set with a visible tamper proof security seal."



- Mean CAUTI rates of 3.1–7.5 infections per 1000 catheter days.
- UTIs represent the highest number of HAIs.
- There is a 2.3% mortality rate from a UTI.
- 5% of bacteriuria cases develop bacteremia.
- CAUTI is the leading cause of secondary nosocomial blood stream infections – 17% coming from a urinary source and with an associated 10% mortality.



## HICPAC/CDC CAUTI Prevention Key Insights<sup>9</sup>

- 17–69% of UTIs are preventable.
- CAUTI pathogens have notable antimicrobial resistance – a quarter of *E.coli* and a third of *Pseudomonas* isolates.

### Commentary

- "Sterile, continuously closed drainage systems became the standard of care based on an uncontrolled study published in 1966 demonstrating a dramatic reduction in the risk of infection in short term catheterised patients with the use of a closed system. Recent data also includes the finding that disconnection of the drainage system is a risk factor for bacteriuria."

## HICPAC/CDC CAUTI Prevention Guidelines<sup>9</sup>



Among the detailed recommendations are:

- Minimise catheter use and duration in all patients.
- Following aseptic insertion maintain a closed system.
- Use aseptic technique and sterile equipment.
- Consider using urinary catheter systems with preconnected, sealed catheter tubing junctions.
- Implement quality improvement programmes - guidelines and protocols
- Education and performance feedback.

## APIC CAUTI Prevention Key Insights<sup>10</sup>



- An estimate of the annual incidence of HAIs and mortality based upon a survey of US hospitals found that urinary tract infections made up the highest number of infections compared to other HAIs.
- CAUTI increases mortality, morbidity, hospital cost and length of stay.
- Bacteriuria leads to unnecessary antimicrobial use.
- Urinary drainage systems can be reservoirs for multidrug resistant bacteria and a source of transmission to other pts.
- The daily risk of acute CAUTI is between 3 and 7%.
- Mortality associated with a single catheterisation is low but high frequency creates a high cumulative burden of CAUTI.
- "50% of blood stream infections in skilled nursing facilities, and in nursing homes, were related to UTIs."
- 50% of hospital associated blood stream infections come from CAUTIs.
- A Foley is a "1 point restraint that limits patient mobility".
- 17 – 69% of CAUTIs can be prevented.
- CAUTIs cost between \$758 to \$1,066.

## APIC CAUTI Prevention Guidelines<sup>10</sup>



- Highlights
  - Insert only for appropriate duration "are there policies or guidelines for use of a portable bladder scanner".
  - Place Foley only as long as clinically indicated.
  - Properly trained personnel.
  - Aseptic technique and sterile equipment.
  - Maintain a sterile closed system
  - Maintain unobstructed urine flow "secure catheters for unobstructed urine flow and drainage".
  - Hand hygiene.

### Bladder bundle example:<sup>10</sup>

A

Aseptic insertion and proper maintenance is paramount

B

Bladder ultrasound may avoid indwelling catheterisation

C

Condom or intermittent catheterisation in appropriate patients

D

Do not use the indwelling catheter unless you must!

E

Early removal of the catheter using reminders or stop orders appears warranted



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