Appendix 9 CNT 009 Minimising Catheter Acquired Urinary Infection

The risk of infection with a urinary catheter is increased because:

- The urinary catheter bypasses the body’s defence mechanism of micturition – when organisms are naturally flushed from the lower urinary tract.
- The urinary catheter enabled micro-organisms to gain direct entry to the bladder along the internal and external catheter surfaces.
- The urinary catheter drainage system allows micro-organisms to gain entry from any of the catheter connection points such as an external drainage system, if they are disconnected or opened.
- Once organisms have entered the urinary catheter, biofilm forms on the lumen surface and will lead to colonisation and potentially to complete blockage of the catheter.

Asymptomatic bacteriuria

Asymptomatic bacteriuria in catheterised patients is not usually significant and often resolves when the catheter is removed. Treatment with antibiotics is not routinely advised. Catheter Specimens of Urine (CSU) should only be taken if the patient is symptomatic or if it is part of a screening process.

If a patient is infected or colonised (any body site) with Meticillin Resistant Staphylococcus aureus (MRSA) treatment with doxycycline may be advised as part of an attempt to clear carriage (refer to Management of MRSA policy). This is usually required prior to admission for surgery or other procedures or to control transmission of MRSA. It may also be advised when changing catheters in patients known to have MRSA.

Urethral Catheter change

Bacteraemia with urinary organisms may occur following a catheter change, although this is most common after unplanned or traumatic re-catheterisation or catheter removal. The patient and carers should be warned that they need to seek immediate medical attention if the patient develops pyrexia or becomes unwell in the week following a catheter change.

A high percentage of community acquired MRSA bacteraemia cases have been found to follow a catheter change, again more commonly when unplanned or traumatic. In patients who are known to currently have or have previously had MRSA colonisation or infection in any body site send a catheter specimen of urine (CSU) 1-2 weeks prior to a planned catheter change; state “pre catheter change” in clinical details, and request “M,C&S and exclude MRSA”.

CNT 009 Infection Prevention and Control
Example of completed Microbiology Request form

The person taking the CSU is responsible for following up the result.

If CSU result is MRSA negative change as planned; if MRSA positive treat with doxycycline 100mg twice daily for 10 days if sensitive, and change the catheter after 24 - 48 hours of treatment. If a doxycycline resistant strain of MRSA is grown, do not treat, but change catheter as planned. Seek urgent consultant microbiologist advice if the patient becomes unwell in the week following catheter change as intravenous antibiotics e.g. vancomycin; teicoplanin may be required.

If a patient requires frequent catheter changes i.e. monthly or less, a risk assessment based on previous laboratory results should be made.

Long term catheterisation is a risk factor for ongoing MRSA carriage. The need for long term catheterisation should be reviewed in all patients.

Traumatic urethral catheter change

As stated above, bacteraemia with urinary organisms may occur following a catheter change, most commonly in a traumatic catheterisation. The patient and carers should be warned that they need to seek immediate medical attention if the patient develops pyrexia or becomes unwell in the week following a catheter change.

In the event of a traumatic catheterisation send a CSU at the time of catheterisation. State "traumatic catheter change" in the clinical details and request “M,C&S and exclude MRSA”. If the patient is known to currently have or have previously had MRSA colonisation or infection in any body site, immediately commence doxycycline 100mg twice daily for 10 days. The person taking the CSU is responsible for following up the result. If the urine is MRSA negative stop doxycycline. If the patient grows a doxycycline resistant strain of MRSA stop the doxycycline and seek consultant microbiologist advice if the patient becomes unwell in the week following catheter change as intravenous antibiotics e.g. vancomycin; teicoplanin may be required.

Example of completed microbiology form for traumatic catheter change where patient has been previously MRSA positive.
Example of completed Microbiology Request form following traumatic urethral catheter change.

Long term catheterisation is a risk factor for ongoing MRSA carriage. The need for long term catheterisation should be reviewed in all patients.

For individual patient advice or clarity please contact the Infection Prevention Control Care team on 01743 277671

Extended Spectrum Beta-lactamase (ESBL) E.coli

If there is a history (any time in the past) of ESBL in urine a CSU should be sent at the time of catheter change. Prophylaxis is not advised as most strains are highly resistant but seek consultant microbiologist advice if the patient becomes unwell in the week following catheter change as intravenous antibiotics may be required. Patients who remain well following catheter change and CSU is ESBL positive will not require treatment.

Long term catheterisation is a risk factor for ongoing carriage of this and other highly resistant coliforms. The need for long term catheterisation should be reviewed in patients with ESBL and other resistant organisms.

Colonisation with other highly resistant organisms

If the patient has a history of previous infection or colonisation with other highly resistant organisms e.g. resistant strains of pseudomonas, or New Delhi metallo-beta-lactamase (NDM) producing Klebsiella, manage as for ESBL.

Infective Endocarditis

Routine antibiotic prophylaxis is not recommended for urinary catheterisation even for high risk patients. However any symptomatic urinary tract infection should be treated promptly.

Any problem with the catheter itself should be recorded in the patient’s notes. The manufacturer should be informed and a record of catheter type, batch number and expiry date should be sent to the company. An incident form must also be completed.

Please see below chart
Flow chart for Urethral Catheter Change

Currently have or have previously had MRSA colonisation or infection in any body site

- **No**
  - Change catheter as planned

- **Yes**
  - Send CSU 1-2 weeks prior to planned change-state and “pre catheter change” and request MC&S and exclude MRSA

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**The person taking the CSU is responsible for following up the result**

- **CSU-MRSA Negative**
  - Change catheter as planned

- **CSU - MRSA Positive**
  - **Doxycycline Resistant**
    - Do not treat, change catheter as planned if patient becomes unwell in the week following catheter change contact consultant microbiologist at RSH on 01743 261000 urgently
  - **Doxycycline Sensitive**
    - Treat with Doxycycline 100mgs twice daily for 10 days and change catheter after 24-48 hours of treatment
Flowchart for Urethral Catheter Change (Traumatic)

**Traumatic Change –**
Send CSU stating ‘traumatic catheter change’ and request ‘MC&S & exclude MRSA’

Currently have or have previously had MRSA colonisation or infection in anybody site

- **Yes**
  - Commence Doxycycline 100mgs twice daily for 10 days

- **No**
  - Observe as normal

The person taking the CSU is responsible for following up the result

- **CSU-MRSA Negative**
  - Stop Doxycycline

- **CSU-MRSA Positive**
  - **Doxycycline Resistant**
    - Stop Doxycycline. If patient becomes unwell in the week following catheter change contact consultant microbiologist at RSH on 01743 261000
  - **Doxycycline Sensitive**
    - Complete the 10 day course of Doxycycline