For prescribers: Understanding your microbiology results - Urine M, C &S

These notes should be read in conjunction with the detailed guidance in the SCAN antibiotic guidelines available on Dorset Formulary, and the PHE Quick reference guide for Diagnosis of UTI. See **https://www.gov.uk/government/publications/urinary-tract-infection-diagnosis**

When to send a urine sample?

- Send immediately for all patients with symptoms of an upper UTI, and for men, children and pregnant women with symptoms suggesting a lower UTI. (NICE)
- In symptomatic women <65y with lower UTI, routine culture is not indicated, but send if **risk factors for resistance**: urinary tract abnormalities, impaired renal function, immunosuppressed, previous resistant UTI, care home resident, recent hospitalisation or treatment failure.
- In patients >65y with suspected UTI, send culture prior to starting antibiotics if feasible, as resistance is more likely in this age group. Dipstick testing is **not** recommended in this group, due to the frequency of bacteriuria, which may be incidental. New onset dysuria is the most suggestive symptom of UTI. See PHE UTI quick reference guide for useful flowchart (link above).
- **Do not send cultures if the patient is asymptomatic** (apart from in pregnancy and certain pre-procedure pathways), **regardless of any dipstick result**. Detecting and treating bacteriuria in other situations does not reduce subsequent symptomatic infections and may even increase them.

Provide relevant clinical details when requesting

- Indicate if this is an **upper UTI** (fever, loin pain etc) so that appropriate antibiotic options are tested and released (nitrofurantoin is NOT effective in upper UTI or sepsis)
- Specify any planned or recent **antibiotics**, to ensure the lab releases the appropriate result, and any relevant antibiotic **allergies**.
- Urine culture methods target the common pathogens, but light growths or unusual organisms could be missed – please highlight any unusual clinical details, or recurrent sterile pyuria on the request. Please call for a discussion with a consultant if you feel the result doesn't fit clinically.

The clinical context is everything!

- **A positive culture result should not automatically be treated**. In the elderly, asymptomatic bacteriuria is particularly common (eg >30% of nursing home residents), and treatment is likely to do harm rather than benefit. Cystitis in non-pregnant women <65y will often settle naturally without antibiotics (NICE)
- Mixed growths and skin organisms often indicate contamination with perineal skin flora. We do not usually perform susceptibility testing in these samples as it could be misleading.
- Lack of a significant inflammatory response (pyuria <100 x 10^6 WBC/L) makes UTI less likely; however in the immunocompromised, infants, and pregnancy, WC may not be raised.

Understanding reports

For coliforms, the lab tests a panel of antibiotics but may not make all results visible. We aim to release appropriate agents for the clinical details, but just because an antibiotic is released, it may not be necessary or the best option for an individual… For advice on specific agents, see table below.

- In pregnancy, please use the agent appropriate to the stage of pregnancy. Note that *asymptomatic* bacteriuria in pregnancy should be confirmed with a second sample before treating.

ANTIBIOTIC	NOTES - see also SCAN guidelines in Dorset Formulary for further details http://www.dorsetformulary.nhs.uk/chaptersSub.asp?FormularySectionID=5
Nitrofurantoin	Use first line for uncomplicated cystitis, but it will not be effective in upper urinary tract infections, systemic sepsis, or impaired renal function (eGFR <45). It has the least effect on gut flora and so resistant UTI tends to emerge more slowly
Trimethoprim	An effective option when the isolate has tested sensitive. As resistance rates are rising, it is less suitable for an empiric option unless resistance is unlikely*
Amoxicillin	An option if the organism is proven susceptible, but >50% will be resistant so not suitable for empirical use.
Pivmecillinam	A penicillin, suitable for lower UTI only. Little effect on gut flora. This result will not usually be reported if the first line options are susceptible, as there is less data on clinical efficacy.
Co-amoxiclav	Result may be reported by lab but narrower spectrum choices are preferred where possible to protect gut flora
Ciprofloxacin	Will not normally be reported by the lab unless there are few alternatives. Please indicate intended empirical use.
Cephalexin	Recommended by NICE as an option for pregnant women or children, otherwise for adults it will only be reported if there are few other options available
Fosfomycin	Will not normally be reported unless there are few alternatives. This is often the last remaining oral option for multi-resistant gram negatives so should not be overused. Not licensed for upper UTI.
Gentamicin	Result may be released by lab for information in case the patient is admitted (Gentamicin is a key antibiotic for management of acute urosepsis)
Ertapenem	A once daily IV antibiotic, which may be delivered through an ambulatory care service if no oral options are available

*RFs for increased resistance: trimethoprim used within past 3 months, previous resistance, older people in residential care (NICE)

** ESBL = extended spectrum beta lactamase. Bacteria that produce these enzymes are resistant to all cephalosporins and usually resistant to co-amoxiclav.