

Best Practice Message

December 2021

Focus on Diagnostics: Appropriateness of routine urine culture

Practice changing moments

- Empiric antibiotics can be used without a urine culture in *women* with uncomplicated urinary tract infections. Urine culture should always be requested in males, patients who experience treatment failure with empiric therapy and those residing in LTC facilities.
- Asymptomatic bacteriuria is a common finding especially in women over 70 and should not be treated except in specific situations such as pregnant women, or renal transplant patients.

Background

20,000 mid-stream urine tests are processed and cultured by Southern Community Laboratory (SCL) for the greater Hastings and Napier region every year with very little variation between years.

This represents a large cost to the health system along with an increased burden on the laboratory workload and can lead to unnecessary treatment of patients. A recent study listed the price of each test at approximately \$29 per test. In Hawkes Bay this would translate to approximately \$580,000 spent on urine cultures alone¹.

When to test

Women who present with classical symptoms of uncomplicated urinary tract infections can be treated without performing a urine culture as the diagnosis can be made on the signs and symptoms alone². However, a urine culture is recommended for those that may have an infection that is complicated due to clinical circumstances such as:

- Males
- Pregnant women
- People with diabetes or renal failure
- People with a urinary catheter
- People living in residential care facilities
- People with persistent or recurrent urinary tract infections

If a patient is receiving a urine culture it is advisable to include clinical information on the testing form. This can assist the laboratory's interpretation of results³. For example: a low colony count can be significant in a sample from an older female patient without a history of UTIs who has symptoms of dysuria and frequency. Catheterised patients may also have significant bacteriuria despite a lower colony count due to less contamination from periurethral flora where treatment may be indicated when it would typically be considered insignificant.

Asymptomatic patients

Bacteriuria is a common finding as bacteria can readily enter the bladder via the urethra. Routine urine culture in patients who are asymptomatic can lead to overtreatment and contribute to the rise in multidrug resistant organisms (MDROs)⁴. If the patient is not symptomatic then it should not be considered a urinary tract infection.

Asymptomatic bacteriuria is most commonly found in patients who are over 65, catheterised, institutionalised patients, sexually active women and patients with diabetes. The incidence of asymptomatic bacteriuria increases with age, it is estimated that 16-18% of women over 70 have asymptomatic bacteriuria compared to 3.5% of the general population⁵ this risk increases further in

institutionalised patients where an estimated 25-50% of patients will have asymptomatic bacteriuria⁶. Urine culture should generally only be performed on asymptomatic patients who are pregnant due to the risk of pyelonephritis and premature delivery or if the patient is to have a procedure involving entering the urinary tract and breaching mucosa⁷.

Empiric antibiotics

In non-pregnant women presenting with mild symptoms of a UTI consider a watch and wait approach with a back pocket prescription if there is no improvement in 48 hours^{3,8}. In all patients who receive antibiotics for a UTI, narrow-spectrum antibiotics such as nitrofurantoin CR should be used first, if Nitrofurantoin is contraindicated (such as a Creatinine clearance <60mL/min) Trimethoprim remains an appropriate option. A review of the antibiotic choice is required once the culture report is available.

Elderly patients

It can be difficult to establish a diagnosis of a UTI in some older patients due to the higher prevalence of chronic urinary symptoms and cognitive impairment. This is also more difficult when we consider the high prevalence of asymptomatic bacteriuria, which is even more common in patients living in ARRC facilities. In patients with non-specific changes such as functional or mental status decline, it is important to consider other causes of decline as well prior to considering ordering a urine culture. Current guidance would suggest avoiding a culture unless the patient is exhibiting symptoms indicative of a urinary source of infection. If symptoms are mild consider deferring antibiotic treatment unless patient does not improve or if symptoms decline.

Table 1: Revised McGeer criteria for diagnosis of urinary tract infection in patients residing in LTC facilities

	UTI without an indwelling catheter (IDC)	UTI with an IDC
Must include at least ONE of the following	<input type="checkbox"/> Acute dysuria <input type="checkbox"/> Fever or leucocytosis and 1≥ of the following: <input type="checkbox"/> Acute costovertebral angle pain or tenderness <input type="checkbox"/> Suprapubic pain <input type="checkbox"/> Gross haematuria <input type="checkbox"/> New or marked increase in incontinence, urgency, and/or frequency <input type="checkbox"/> If fever or leukocytosis is not present then 2 or more of the above criteria is sufficient	<input type="checkbox"/> Fever, rigors, new-onset hypotension with no alternative site of infection <input type="checkbox"/> Acute change in mental status or acute functional decline with no alternative diagnosis <input type="checkbox"/> New onset suprapubic pain or costovertebral angle pain or tenderness <input type="checkbox"/> Purulent discharge from around the catheter
AND		
Must include at least ONE of the following	<input type="checkbox"/> ≥10 ⁵ cfu/mL of no more than 2 species of organisms in a voided sample <input type="checkbox"/> ≥10 ² cfu/mL of any organism(s) from a specimen collected via in/out catheter	<input type="checkbox"/> ≥10 ⁵ cfu/mL of any organisms* Urinary catheter specimens are ideally collected following replacement of catheter if current IDC has been in place for at least 14 days

References:

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Authored by: Ben Firestone **Reviewed by:** Riani Albertyn

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