The Laboratory Services Reform Programme

ADVICE NOTE

Routine Microbiological Laboratory Examination of Urine Samples in Adults

Version 1 Issued 07/10/2025

LS/004/1.0/2026

Clinical Practice Guidance Document Cover Sheet

Document Type	Advice Note
Document Title	Microbiological Laboratory Examination of Urine Samples in Adults
Document Owner/Author	Meghan Cotter
National Service/Area	Office of the Chief Clinical Officer
Approved by:	Professor Martin Cormican
Unique Identifier Number(UID):	LS/0004/1.0/2025
Version Number:	1
Publication Date:	07/10/2025
Recommended Revision Date: *	07/10/2027
Electronic Location:	https://www.hse.ie/eng/about/who/cspd/lsr/resources/advice.html

Version	Revision Date	List Section Numbers Changed	Author

The Laboratory Services Reform Programme offers the following advice:

Definition of Scope. This note relates to submission of urine samples for microbiological examination (culture and microscopy) for the purpose of diagnosis of urinary tract infection in adults (more than 16 years old). It does not address examination of urine samples by molecular methods for sexually transmitted infections. It does not address the role of culture of maternal urine in relation to prevention of early onset Groups B Streptococcal (GBS) infection. Prevention of early onset GBS disease in term infants is addressed in the guidance document referenced below.

1.1 Advice for Laboratory Users

1. Urine samples should be sent for culture if there is a clinical assessment that suggests complicated urinary tract infection **or** sepsis related to the urinary tract.
2. In otherwise healthy non- pregnant patients with clinical features of uncomplicated urinary tract infection (cystitis), urine culture may be useful in some patients to support the diagnosis or guide selection of antibiotic treatment. However, urine culture is often not required and should not be sent as a routine.
3. A request for culture of urine should state clearly that one of the following suspected conditions/indications is present:
    - Pregnant (to assess for asymptomatic bacteriuria)
    - Complicated UTI
    - Recurrent UTI
    - Pyelopnephritis
    - Sepsis
    - Abnormal urinary tract
    - Planned urological procedure
    - Other specific indication
4. The request should indicate if the urine was collected during urination (often referred to as a mid-stream urine sample/MSU) or from a catheter or other. .
5. Urine samples should not be sent routinely for culture from patients with indwelling urinary catheters or ileal conduit unless there are clinical features of sepsis or upper urinary tract infection.
6. Urine samples should not be sent for microbiological laboratory examination as a routine on admission to hospital or other healthcare facility
7. Urine samples should be submitted in the container specified as appropriate by the laboratory performing the examination.

1.2 Advice for Laboratories and Users

1. Laboratories should communicate to laboratory users the specific indications for culture of urine samples accepted by the laboratory and the type of container required.
2. Culture of urine should be performed when relevant and legible clinical details and requestor identification are provided on the request (electronic or paper) accompanying the sample and the sample received is suitable for analysis.
3. To the greatest extent practical, requests for culture of urine samples that do not meet these requirements should not be processed.

4. There are significant practical challenges in implementing a process to manage requests and identify samples that should not be processed in the absence of electronic ordering. Providing users with a specific list of terms such as that above (point 2) that must be legible on a request form for acceptance of the sample for testing has been used effectively in some laboratories.
5. If samples are not processed a report should issue promptly to the effect that culture of the urine sample was not performed because the criteria for testing were not met.
6. In so far as is practical with the available laboratory information system, laboratories should consider adding a comment to reports of samples that are not processed indicating the requirements for testing or indicating where the user can access these requirements
7. In so far as practical urine accepted for processing should be examined for white cells and red cells by automated methods or microscopy to allow rapid reporting of samples that do not require culture based on defined criteria (patient criteria combined with white cell counts below a defined limit). If *Trichomonas vaginale* is definitely identified on microscopy it should be reported.
8. When using automated systems for performing cell counts laboratories should ensure that the approach to culture used avoids misleading results related to carry over of bacteria between samples by the cell counting instrument.
9. When culture is performed, selection of colonies for identification of organisms and antimicrobial susceptibility testing is usually appropriate when there is a pure culture at greater than or equal to 1,000,000 CFU/L (10^7) (10 000 CFU/ml (10^4)). It may also be useful in some samples that do not meet this criterion.
10. When cultured colonies meet criteria for identification, antimicrobial susceptibility testing should be routine in organisms where the pattern of antimicrobial susceptibility is not predictable (for example *E. coli*).
11. Routine antimicrobial susceptibility testing is not required for species that are predictably susceptible to antimicrobial agents suitable for use as first line agents for empiric treatment of uncomplicated UTI (www.antibioticprescribing.ie) such as *Enterococcus faecalis*, *Streptococcus agalactiae* and *Streptococcus pyogenes*. Reporting these organisms with predicted susceptibility provides a result 24 hours earlier than is possible if waiting for susceptibility test results.
12. Reporting of predicted susceptibility test results should be supported by periodic (for example annual) surveillance of a sample of isolates. Susceptibility tests results may also be required to guide treatment of individual patients in some circumstances, for example if there is a contraindication to use of first line agents such as allergy to penicillin.
13. Routine antimicrobial susceptibility testing is not generally required on organisms of the same species cultured from repeat samples taken within 5 days of a previous sample.

2 Background

Inappropriate culture of urine samples tends to promote unnecessary and potentially harmful antibiotic prescription in response to incidental bacteriuria. It can also misdirect diagnosis by attribution of illness to urinary tract infection in patients in whom bacteriuria is incidental to presenting clinical features.

For these reasons culture of urine samples should not normally be performed in people with no clinical features of sepsis or urinary tract infection. It should not be performed as an “admission

routine" in hospital or other healthcare setting. Routine use of dipstick for nitrite and leucocytes esterase in patients without clinical features of urinary tract infection to select samples for submission of culture based on a positive test is not appropriate.

Concentrated urine can have a strong odour and appear cloudy especially if it has been allowed to stand for some time. This is not an indication for microbiological examination of urine in the absence of clinical features of sepsis or urinary tract infection.

Culture of urine samples to detect asymptomatic bacteriuria is only relevant in specific cohorts such as in some pregnant patients and others with specific risk factors.

Detection of white cells in urine in the absence of detection of bacteria by routine culture methods has a number of causes including antibacterial treatment administered before specimen collection. Other considerations include non-infectious inflammation or infection with organisms that are not cultured by routine culture methods including agents of sexually transmitted infection.

People with indwelling urinary catheters almost always have white cells and high numbers of bacteria in their urine within weeks of insertion of the catheter. Culture of urine from people with indwelling urinary catheters is only likely to be useful if there are clinical features of upper urinary tract infection or sepsis or a planned urological procedure for which targeted prophylaxis may be required. Urine for culture from patients with a urinary catheter must be directly from the catheter, never from the bag.

Uncomplicated urinary tract infection (cystitis) is common in otherwise heathy women. In typical cases the diagnosis can be made with a very high degree of confidence based on clinical features and without a requirement for laboratory culture. Culture of urine is appropriate in this context if there is reason to expect that empiric guidance is not sufficient to guide treatment. It is often useful in those with recurrent urinary tract infection.

3 References

National Clinical Practice Guideline Prevention of Early-Onset Group B Streptococcal Disease in Term Infants.https://www.hse.ie/eng/about/who/acute-hospitals-division/woman-infants/clinical-guidelines/prevention-of-early-onset-group-b-streptococcal-disease-in-term-infants-2023-.pdf

Authors: Developed by the Laboratory Services Reform Programme incorporating The National Clinical Pathology Programme.

Approved By: Martin Cormican MCRN 011105,
HSE Clinical Lead for Laboratory Services Reform Programme.

ENDS