



Use of dipstick urinalysis to assess for evidence of urinary tract infection in adults

Statements below are true of persons in the community, hospital and residential care facilities.
Statements below are true of dipstick urinalysis conducted by manual or automated means.

- Female (non-pregnant) patients under 65 years old:** Dipstick urinalysis may be useful as an aid to diagnosis when a UTI is suspected based on the presenting signs and symptoms (*Box A*). If dipstick is positive for nitrite OR leukocyte and red blood cells UTI is likely.
- Male patients under 65 years old:** The use of dipstick urinalysis is of limited value as an aid to diagnosis and is **not recommended**. Diagnosis should always be confirmed by urine culture. Dipstick urinalysis may be helpful in some clinical situations to decide if a working diagnosis of UTI should be made. Whilst they are poor at ruling out infection in males, positive nitrite makes UTI more likely.
- Pregnant females:** The use of dipstick urinalysis in assessing for evidence of a UTI is not a useful guide to management and is **not recommended**.
- All persons aged 65 years and older:** The use of dipstick urinalysis in assessing for evidence of a UTI is not a useful guide to management and is **not recommended**.
- All persons with an indwelling catheter:** The use of dipstick urinalysis in assessing for evidence of a UTI is not a useful guide to management and is **not recommended**.
- Response to treatment:** Dipstick urinalysis has no role in assessing response to treatment of a UTI.
- Absence of signs and symptoms of a UTI:** The use of dipstick urinalysis to assess for evidence of a UTI is not useful and **should be avoided in people of all ages**. This includes those instances which are commonly reported to trigger dipstick urinalysis such as:
 - Foul smelling, dark, concentrated and/or cloudy urine: In the absence of signs and symptoms of a UTI (*Box A*), this is suggestive of dehydration rather than of infection.
 - Altered mental status and behavioural changes (confusion, decreased appetite, decreased balance, falls, disorientation, wandering, and verbal aggression): In the absence of signs and symptoms of a UTI, these should not be readily attributed to a UTI. Consider other common causes (*Box B below*).

Box A: Signs and Symptoms of UTI

- Acute dysuria
- New/worsening frequency
- New/worsening urgency
- New onset incontinence
- Fever
- Suprapubic or costovertebral angle pain or tenderness
- Haematuria

If the patient is haemodynamically stable and does not have typical UTI signs and symptoms, a medication review and evaluation of potential triggers is recommended. A period of observation for 24 hours with adequate hydration and attention to other triggers is usually appropriate.

Box B: Potential causes of delirium/decline in function [PINCH ME]:

P	Pain: Is the person in pain? Has urinary retention been excluded?
IN	Infection: Is there a possible infection? Consider sepsis
C	Constipation: When was the last bowel movement?
H	Hydration/Nutrition: is there major electrolyte imbalance? Has hypoxia, hypotension, hypoglycaemia been considered?
M	Medication: omission of regular medication, addition of new medication or adverse effects of existing medication (see <i>Box C</i>)
E	Environment: change of environment, noise or activity levels impacting sleep/rest

Box C: Medications to consider reviewing:

- Hypnotics including benzodiazepines
- Gabapentinoids
- Opioids including tramadol, and patches
- Anticholinergics such as Amitriptyline, Chlorphenamine, Tolterodine, Oxybutynin, Paroxetine, Procyclidine, Promethazine, Chlorpromazine.

Rationale:

- Inappropriate use of dipsticks can lead to unnecessary antibiotic prescribing which does not benefit the patient and may cause considerable harm including adverse effects, drug interactions, and antimicrobial resistance.
- Asymptomatic bacteriuria (ASB), the presence of bacteria in the urine without symptoms of a UTI, can be present at any age but is particularly common in those aged over 65 years and is very common in those persons with an indwelling urinary catheter. Asymptomatic bacteriuria can cause a positive urine dipstick result.
- ASB amongst those aged 65 years and older has been reported as high as 20-50% for those resident in the community, increasing to 50-70% for those resident in long-term care facilities. Incidence of catheter-associated ASB has been reported to increase 5-10% each day a short-term catheter is in place, with up to 100% of catheters reportedly having associated ASB at 30 days.
- ASB is not harmful. There is some evidence of a small increase in risk of UTI in those with ASB but there is no evidence that antibiotic treatment reduces this risk and antibiotic use can be associated with harm and with a shift to colonisation with more antibiotic-resistant bacteria. (Exceptions where benefit has been demonstrated: pregnancy and prior to a urological procedure causing mucosal trauma).
- When bacteria are present in the urinary tract (colonised in a harmless state (ASB) or causing an active infection (UTI)), results from a dipstick urinalysis, laboratory urinalysis or culture will most likely identify the presence of leucocytes/white cells/pyuria (the host response to the presence of bacteria), nitrites (a chemical produced by gram-negative bacteria) and the bacteria itself. The result can be difficult to interpret in the absence of clinical assessment and means we may be misled into thinking the person has a UTI when in fact they have ASB.
- Diagnosis of a UTI should be based on a clinical assessment and presence of clinical signs and symptoms. Testing either with dipstick or laboratory testing has a supportive role only. Urine culture and sensitivity can be of value in guiding treatment particularly in patients with complex infection but is not necessary in most cases of simple cystitis.

References:

- *Clinical Practice Guideline for the Management of Asymptomatic Bacteriuria: 2019 Update by the Infectious Diseases Society of America. Clinical Infectious Diseases, March 2019*
- *Management of suspected bacterial lower urinary tract infection in adult women, SIGN guidelines 160. September 2020.*
- *European Association of Urology (EAU) Guidelines on Urological Infections. March 2021.*
www.uroweb.org/guideline/urological-infections/
- *Little, P. et al. Validating the prediction of lower urinary tract infection in primary care: sensitivity and specificity of urinary dipsticks and clinical scores in women. Br J Gen Pract. 2010; 60(576): 495-500.*
- *Koeijers JJ et al. Evaluation of the nitrite and leukocyte esterase activity tests for the diagnosis of acute symptomatic urinary tract infection in men. Clin Infect Dis. 2007;45(7):894-6.*
- *Urinary tract infection (Lower) Male, NICE Clinical Knowledge Summary. Accessed September 2021.*
- [Diagnosis of urinary tract infections: Quick reference tool for primary care for consultation and local adaptation.](#) Public Health England. May 2020. GW-1263.
- *Integrated Care Pathways & Delirium Algorithms, HSE National Dementia Office, www.dementiopathways.ie, accessed June 2021.*