Diagnosis of urinary tract infections: quick reference tool for primary care.

Flowchart for adults over 65 years with suspected UTI

**Urinary signs/symptoms, abnormal temperature, non-specific signs of infection**

**Do not perform urine dipsticks**

Dipsticks become more unreliable with increasing age over 65 years. Up to half of older adults, and most with a urinary catheter, will have bacteria present in the bladder/urine without an infection. This “asymptomatic bacteriuria” is not harmful, but although it causes a positive urine dipstick, antibiotics are not beneficial and may cause harm. 26A, 76A, 32C, 5A.

**THINK SEPSIS - check for signs/symptoms using local or national tool**

Such as NICE, RCGP or NEWS2 10C, 11A, 12C

**CHECK for signs/symptoms of pyelonephritis**

- kidney pain/tenderness in back, under ribs 26A, 14C
- new/different myalgia, flu-like illness 13A, 14C
- nausea/vomiting 26A, 14C
- shaking chills (rigors) 26A, 3D, 4B, 14C
- OR temp over 37.9°C OR 36°C or below

**CHECK ALL FOR NEW signs/symptoms of UTI**

- new onset dysuria along 28A, 3D, 19C
- OR 2 or more:
  - temperature 1.5°C above patient’s normal twice in the last 12 hours 26A, 4B
  - new frequency or urgency 26A, 3D
  - new incontinence 26A, 3D
  - new or worsening delirium/debility 26A, 3D, 20A
  - new suprapubic pain 26A, 3D, 19C
  - visible haematuria

If fever and delirium/debility only: consider other causes before treating for UTI (“see box below”) 25A.

If urinary catheter: also check for catheter blockage AND consider catheter removal or replacement 25A, 24A.

**Consider Genitourinary Syndrome of Menopause (vulvovaginal atrophy), urethritis, sexually transmitted infections, and prostatitis** 10C, 25C

**CHECK for other causes of delirium if relevant (PINCH ME)**

- P: Pain
- I: Infection
- N: Nutrition
- C: Constipation
- H: Hydration

**CHECK ALL for other localised symptoms/signs**

- Two or more symptoms or signs of:
  - respiratory tract infection
  - gastrointestinal tract infection
  - skin and soft tissue infection

Advises “watchful waiting” with further investigation for other causes

**Consider sepsis OR pyelonephritis**

- send urine for culture before antibiotics are taken 13A, 17B, 18A
- immediately start antibiotic-management for upper UTI/sepsis using NICE/PHE guideline on pyelonephritis: antimicrobial prescribing or local/national guidelines for sepsis, considering resistance risk 18A
- if urinary catheter: consider removing or changing as soon as possible 13C, 14B
- refer if signs/symptoms of serious illness or condition 13C, 11A, 12C, 14C, 16A

**UTI LIKELY**: share self-care and safety-netting advice using TARGET UTI leaflet 20D, 23B.

- always send urine culture if feasible before antibiotics are taken, as greater resistance in older adults 26A, 17B, 24A, 26A
- if mild symptoms consider back-up antibiotics in women without catheters and low risk of complications 26A, 26A, 27B
- offer immediate antibiotics using NICE/PHE guideline on lower OR catheter-associated UTI: antimicrobial prescribing 26A, 26A
- if urinary catheter for over 7 days consider changing (if possible remove) as soon as possible, but do not delay antibiotics 13C, 14C, 24A
- review antibiotic choice and culture result, use narrow-spectrum antibiotics if possible 24A, 26A

**Consider other local/national resources for delirium management** 29C

Give safety-netting advice about consulting if:

- worsening symptoms 26A, 28A
- no improvement 48 hrs after starting antibiotics 26A, 28A
- signs of pyelonephritis 24A, 26A
- any symptom/sign of sepsis 26A

**Follow local diagnostic and treatment guidance**

**If worsening signs or symptoms consider**

- admission or start/change antibiotic 13C, 11A, 12C, 14C, 16A

Key:

- Suspected sepsis alert
- UTI symptom
- Action advised
- Other advice

Table summary of flowchart for adults over 65 years with suspected UTI

<table>
<thead>
<tr>
<th>Men and women over 65 years may present with:</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ localised signs or symptoms of a UTI including new onset dysuria; incontinence; urgency(^{18})</td>
</tr>
<tr>
<td>□ temperature: 38°C or above; 36°C or below; 1.5°C above normal twice in the last 12 hours (^ {19\text{B}}), (^ {30\text{A}}), (^ {27\text{C}})</td>
</tr>
<tr>
<td>□ non-specific signs of infection: for example delirium; loss of diabet control (^ {28\text{C}}), (^ {30\text{A}}), 30B, 30D, 31D</td>
</tr>
</tbody>
</table>

Do not perform urine dipstick as they become more unreliable with increasing age over 65 years

- up to half of older adults in long term care facilities, and most of those who have had a urinary catheter for over 30 days, will have bacteria present in the bladder/urine without an infection\(^{16}\)
- this so called asymptomatic bacteriuria is not harmful, and although it causes a positive urine dipstick, antibiotics are not beneficial \(^ {28\text{A}}, \text{10\text{B}} - \text{78}, \text{9A}\) 

Use symptoms and signs to determine the most appropriate management

First think sepsis: check for signs using local or national such as NICE, RCGP or NEWS\(^ {29\text{C}}, \text{11\text{A}}, \text{12\text{C}}\)

Exclude pyelonephritis checking for any one sign:

- kidney pain/tenderness in back, under ribs \(^ {18\text{A}}, \text{14\text{C}}\)
- new/different myalgia, or flu-like symptoms \(^ {18\text{B}}\)
- nausea/vomiting \(^ {18\text{A}}\)
- shaking chills (rigors) or temp over 37.9°C or 36°C or below \(^ {28\text{B}}, \text{30\text{D}}, \text{14\text{C}}\)

If signs of sepsis or pyelonephritis (if no kidney pain rule out other localised infection *see symptoms of other infection box below):

- send urine for culture before antibiotics are taken \(^ {9\text{A}}\), \(^ {17\text{B}}, \text{19\text{A}}\)
- assess antibiotic resistance risk and immediately start antibiotic for upper UTI/sepsis using NICE/PHE guideline on pyelonephritis: antimicrobial prescribing or local/national guidelines for sepsis \(^ {18\text{A}}\)
- if urinary catheter for more than 7 days: consider changing (if possible remove) as soon as possible but do not delay antibiotics \(^ {10\text{C}}, \text{16\text{C}}, \text{24\text{A}}\)
- refer if signs or symptoms of serious illness or condition \(^ {10\text{C}}, \text{11\text{A}}, \text{12\text{C}}, \text{14\text{C}}, \text{16\text{A}}\)

Then check all for NEW URINARY symptoms/signs

- □ NEW onset dysuria alone 28\text{B}, 30\text{D}, 19\text{C}
- OR 2 or more new:
  - □ temperature: 1.5°C above normal twice in the last 12 hours \(^ {28\text{B}}, \text{48}\)
  - □ new frequency or urgency \(^ {28\text{B}}, \text{30\text{D}}, 19\text{C}\)
  - □ new incontinence \(^ {28\text{B}}, \text{30}\)
  - □ new or worsening delirium/debility \(^ {28\text{B}}, \text{30\text{D}}, \text{20\text{A}}\)
  - □ new suprapubic pain \(^ {28\text{B}}, \text{30\text{D}}, 19\text{C}\)
  - □ visible haematuria \(^ {28\text{B}}, \text{30\text{D}}, 19\text{C}\)

If fever and delirium/debility only: consider other infections before treating for UTI \(^ {20\text{A}}\)

Consider: Genitourinary Syndrome of Menopause (vulvovaginal atrophy) as can present with dysuria \(^ {21\text{D}}\)
Also consider risk of urethritis, prostatitis or STI \(^ {38\text{A}}\)

Check all for 2 or more signs or symptoms suggesting other infection\(^ {20\text{A}}\):

- □ respiratory tract infection: shortness of breath; cough or sputum production; new pleuritic chest pain \(^ {30}\)
- □ gastrointestinal tract infection: nausea/vomiting; new abdominal pain; new onset diarrhoea \(^ {30\text{C}}, \text{30\text{C}}\)
- □ skin and soft tissue infection: new redness; warmth \(^ {30}\)

Follow diagnostic and treatment guidance if infection suspected

Check all for other causes of DELIRIUM (PINCH ME) and manage as needed\(^ {20\text{A}}, \text{27\text{C}}\)

- □ P: Pain
- □ I: poor Nutrition
- □ N: other Infection
- □ C: Constipation
- □ H: poor Hydration
- □ M: other Medication
- □ E: Environment change

- using PINCH ME can help identify other potential underlying causes of delirium superimposed on dementia. It can be used in different clinical settings \(^ {30}\)
- consider other local/national resources for delirium management \(^ {30\text{C}}\)
- Advise watchful waiting, with further investigation if needed

Share self-care and safety-netting advice using TARGET UTI leaflet for older adults

Safety-netting to seek advice if:

- □ worsening symptoms \(^ {24\text{A}}, \text{25\text{A}}\)
- □ signs of pyelonephritis \(^ {24\text{A}}, \text{25\text{A}}\)
- □ signs/symptoms of sepsis \(^ {24\text{A}}, \text{25\text{A}}\)
- □ no improvement after 48 hours \(^ {24\text{A}}, \text{25\text{A}}\)

Self-care advice:

- □ drink enough fluids to avoid feeling thirsty and to keep urine pale \(^ {30\text{D}}, \text{34\text{C}}, \text{35\text{C}}\)
- □ taking paracetamol regularly up to 4 times daily for relief of pain or fever \(^ {29\text{D}}, \text{29\text{B}}\)
- □ ways of preventing further episodes of UTI

Please refer to the information and reference tables in joint NICE/PHE guidance: NICE guidelines on UTI (lower): antimicrobial prescribing or NICE guidelines on pyelonephritis (acute): antimicrobial prescribing or NICE/PHE guideline on catheter-associated UTI: antimicrobial prescribing