

Urine submissions to microbiology laboratories vary greatly from 40/1000 to 160/1000 patients.

- Consider whether urine culture is needed       Do not send urines in asymptomatic unless antenatal

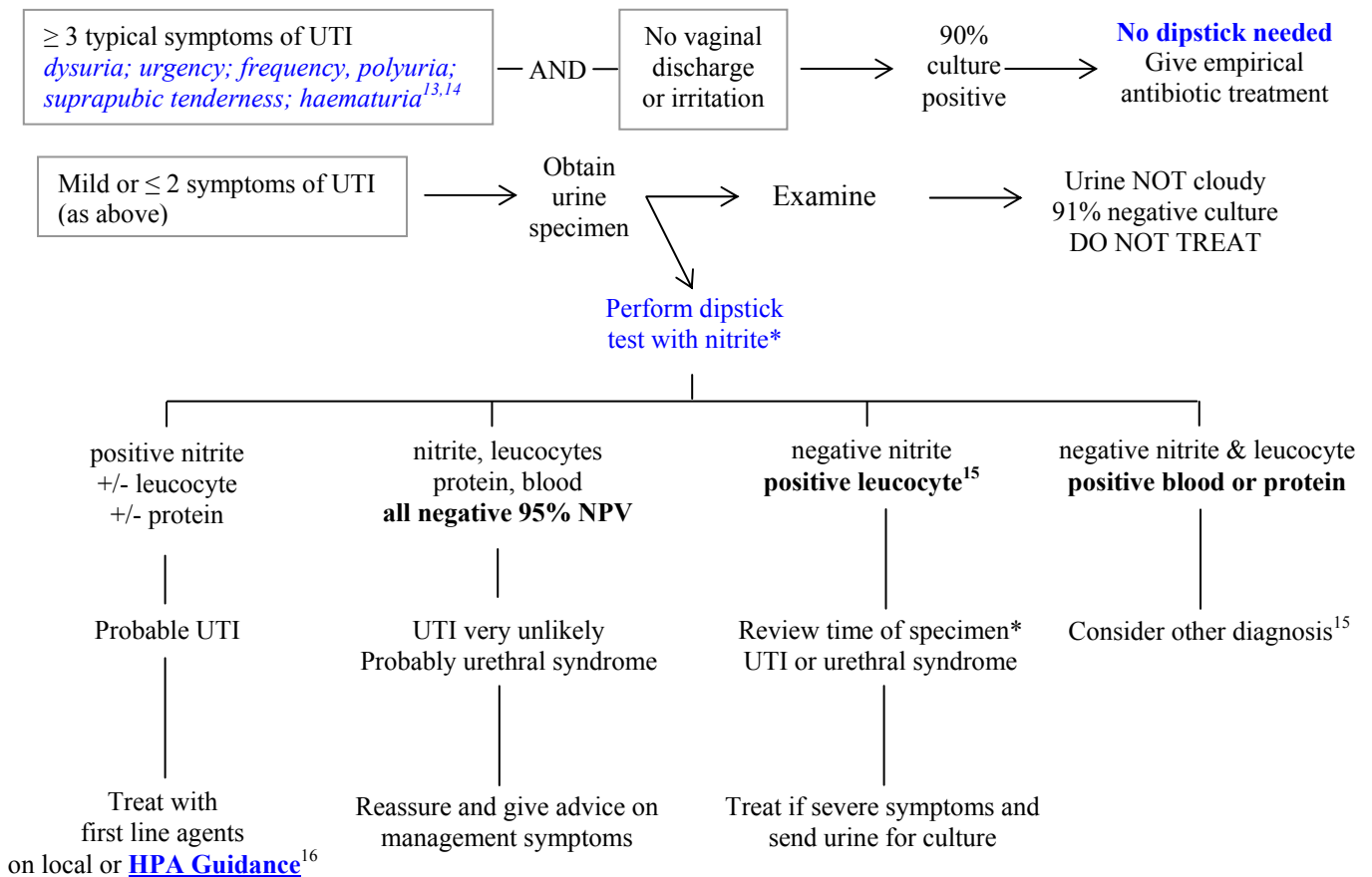
**THE ELDERLY:**

- B<sup>+</sup>** Asymptomatic bacteriuria in the elderly is very common and is not related to increased morbidity or mortality.<sup>1</sup>  
Investigation and treatment will increase side-effects and medicalise the condition<sup>2,3</sup>  
Only sample if: two signs of infection, especially dysuria, pyrexia >38° or new incontinence.<sup>2,3</sup>

**ACUTE UNCOMPLICATED UTI IN ADULT WOMEN: Affects up to 15% of women each year<sup>4</sup>**

- B<sup>+</sup>** Routine urine culture is unnecessary.<sup>5</sup> Use symptoms, urine appearance and dipstick urine tests to diagnose UTI and reduce antibiotic use and unnecessary laboratory investigations<sup>6-11</sup>
- A<sup>-</sup>** 50% of women with symptoms of UTI have negative culture and symptoms are due to inflammation of the urethra – the ‘so called’ urethral syndrome.<sup>12</sup>

**ASSESS SYMPTOMS**



\*Nitrite is produced by the action of bacterial nitrate reductase in urine. As contact time between bacteria and urine is needed, morning specimens are most reliable.<sup>17</sup> Leucocyte esterase detects intact and lysed leucocytes produced in inflammation. Haematuria and proteinuria occur in UTI but are also present in other conditions. When reading test **WAIT** for the time recommended by manufacturer.

**LABORATORY TESTING FOR CULTURE AND SENSITIVITY SHOULD BE PERFORMED IN<sup>18,19</sup>**

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| <p><b>B<sup>+</sup></b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Pregnancy<sup>20</sup> -             <ul style="list-style-type: none"> <li><input type="checkbox"/> in all at first antenatal visit to detect asymptomatic bacteriuria which is associated with pyelonephritis and premature delivery<sup>18,21</sup></li> <li><input type="checkbox"/> if symptomatic, for investigation of possible UTI</li> </ul> </li> <li><input type="checkbox"/> Suspected UTI in children, any sick child and every young child with unexplained fever<sup>22,23</sup></li> <li><input type="checkbox"/> Suspected pyelonephritis<sup>24</sup> (<i>temp</i> ≥ 39.4; <i>rigors</i>; <i>nausea</i>; <i>vomiting</i>; <i>diarrhoea</i>; <i>loin pain or tenderness</i>)</li> <li><input type="checkbox"/> Suspected UTI in men<sup>10</sup></li> </ul> | <p><b>B<sup>+</sup></b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Catheterised patients: Send sample only if features of systemic infection, as bacteriuria is usual.<sup>24,25</sup></li> <li><input type="checkbox"/> Failed antibiotic treatment or persistent symptoms<sup>24,26</sup></li> <li><input type="checkbox"/> Community multi-resistant <i>E. coli</i> with <b>Extended-spectrum Beta-lactamase enzymes</b> are increasing so perform culture in all treatment failures. ESBLs are multi-resistant but usually remain sensitive to nitrofurantoin</li> <li><input type="checkbox"/> abnormalities of genitourinary tract</li> <li><input type="checkbox"/> renal impairment.</li> </ul> |
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**C**  In sexually active young men and women with urinary symptoms consider *Chlamydia trachomatis*

## SAMPLING

- B<sup>+</sup>**
- In women: the specimen should be mid-stream - cleansing with water does not reduce contamination. Antiseptic leads to false negatives.<sup>27</sup> Holding the labia apart reduces contamination but may not be practical.<sup>27-29</sup>
  - In toddlers: potties washed in hot water (60°C) with washing up liquid are suitable for collection.<sup>30</sup>
  - In infants: urine collection pad in a nappy may be used.<sup>31</sup> Bag urines are often contaminated.<sup>24</sup>
  - Refrigerate specimens to prevent bacterial overgrowth, or use specimen pots containing boric acid.<sup>32,33</sup>

## HOW DO I INTERPRET A CULTURE RESULT?

- Culture of single organisms  $\geq 10^4$  colony forming units (CFUs)/mL with urinary symptom is usually diagnostic of UTI.
  - Escherichia coli* or *Staphylococcus saprophyticus* significant if  $\geq 10^3$  CFU/mL.<sup>15</sup>
- White blood cells:
- White cells  $\geq 10^4$ /mL ( $10^7$  WBC/L) is considered to represent inflammation
  - Pyuria may be absent in childhood UTI
  - In adults 'no white cells present' indicates no inflammation and reduces significance of culture
- Sterile pyuria:
- Consider *Chlamydia trachomatis* (if 16-24 years), other vaginal infections, other non-culturable organisms or renal pathology
- Epithelial cells or mixed growth:
- Presence indicates perineal contamination, which reduces significance of culture.

KEY	A	B	C	indicates grade of recommendation	<input checked="" type="checkbox"/>	good practice point
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This guidance was produced by the HPA Primary Care Unit & South West GP Microbiology Laboratory Use Group in collaboration with the AMM, GPs and experts in the field, and is in line with other UK GP guidance including [CKS](#)<sup>19</sup> and [SIGN](#)<sup>34</sup>

### Grading of guidance recommendations

The strength of each recommendation is qualified by a letter in parenthesis.

Study design	Recommendation grade
Good recent systematic review of studies	A+
One or more rigorous studies, not combined	A-
One or more prospective studies	B+
One or more retrospective studies	B-
Formal combination of expert opinion	C
Informal opinion, other information	D

### References

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[http://www.cks.library.nhs.uk/search?q=uti\\_men&page=1](http://www.cks.library.nhs.uk/search?q=uti_men&page=1) [http://www.cks.library.nhs.uk/search?q=uti\\_women&page=1](http://www.cks.library.nhs.uk/search?q=uti_women&page=1) (All accessed 23<sup>rd</sup> April 2008)
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#### **Other general reading on laboratory diagnosis of UTI**

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Managing urinary tract infection in women. *Drug & Therapeutic Bulletin* 1998 **36**:30-32

#### **Treatment advice can be found on our website:**

[http://www.hpa.org.uk/web/HPAwebFile/HPAweb\\_C/1194947333801](http://www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1194947333801) (Accessed 26<sup>th</sup> January 2009)

We welcome, in fact encourage, opinions on the advice given and future topics we should cover. We would be most appreciative if you could email any evidence or references that support your requests for change so that we may consider them at our annual review.

Comments should be submitted to Dr Cliodna McNulty, Head, HPA Primary Care Unit, Microbiology Laboratory, Gloucestershire Royal Hospital, Great Western Road, Gloucester GL1 3NN.

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