



## Is booking an urgent UTI appointment the best sign of a UTI?

### CLINICAL QUESTION

**What helps in diagnosing symptomatic uncomplicated urinary tract infections (UTI) in adult women?**

### BOTTOM LINE

**Individual symptoms and leukocytes on urinalysis generally add little to diagnosis. Presence of nitrites increases the probability of UTI, but their absence means little. About 60% of women presenting to primary care with possible UTI have a UTI (before any history, physical or testing). A single urine culture likely misses cases, meaning prevalence is even higher.**

### EVIDENCE

- Prevalence of UTI: In primary care, 49%-79% women presenting with possible UTI have a UTI depending on criteria for positive culture.<sup>1</sup> Others found average prevalence of 55%, 59%, 40-60%.<sup>2-4</sup>
- UTI symptoms: 4 systematic reviews<sup>1,3-5</sup> (4-16 studies, 948-3711 women) in family practice or emergency departments. The largest<sup>1</sup> in primary care pooled data with 16 studies and 3711 patients:
  - Frequency: Positive likelihood ratio (LR+)=1.09 and Negative Likelihood Ratio (LR-)=0.58
  - Dysuria and urgency similar: LR+= 1.17-1.22, LR-= 0.61-0.7.
  - Others found similar<sup>3-5</sup> with highest LR+=2.3 for any symptom.<sup>4</sup>

- Therefore, clinician elicited symptoms are not very helpful.
- Urine dip (urinalysis): 6 systematic reviews<sup>2-4,6-8</sup> (4-43 studies, 948-12,554 women). The largest pooling primary care data<sup>3</sup> (11 studies, 2813 patients):
  - Leukocytes ( $\geq 1+$ ):<sup>3</sup> LR+=1.4 and LR-=0.44.
    - Others<sup>2,4,6,7</sup> found LR- similar but LR+=1.0-4.9.
    - Overall, leukocytes not very helpful.
  - Nitrite ( $\geq 1+$ ):<sup>3</sup> LR+=6.5 and LR-=0.58.
    - Others<sup>2,4,6,7</sup> found LR- similar and LR+=1.5-29 (highly inconsistent).
    - Overall, nitrites are helpful 'ruling-in' when positive; not helpful "ruling-out" if negative.
  - Blood ( $\geq 1+$ ):<sup>4</sup> LR+=2.1 and LR-=0.3.
- Many limitations, examples include no pooling,<sup>4,6</sup> differing ( $10^2$ - $10^8$ ) colony forming units as culture gold standard,<sup>2,6,7</sup> older than 30 years,<sup>8</sup> and differing populations/asymptomatic patients.<sup>7</sup>

## CONTEXT

- Urine culture is an imperfect 'gold' standard (likely misses cases). Examples:
  - Of 220 symptomatic women, 80% had a positive culture but 96% were *E. coli* positive on Polymerase Chain Reaction (PCR).<sup>9</sup>
  - Of 42 untreated symptomatic women with initially negative cultures, 31% had a positive culture within 6 weeks.<sup>10</sup>
- Likelihood ratios provide more information than sensitivity/specificity.
  - LR+ for making diagnosis:  $\geq 10$  very helpful, 5-9.9 good, 2-4.9 moderate help and  $< 2$  provides little help.
  - LR- for ruling-out diagnosis:  $\leq 0.1$  very helpful, 0.11-0.2 good, 0.21-0.5 moderate help and  $> 0.5$  provides little help.

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