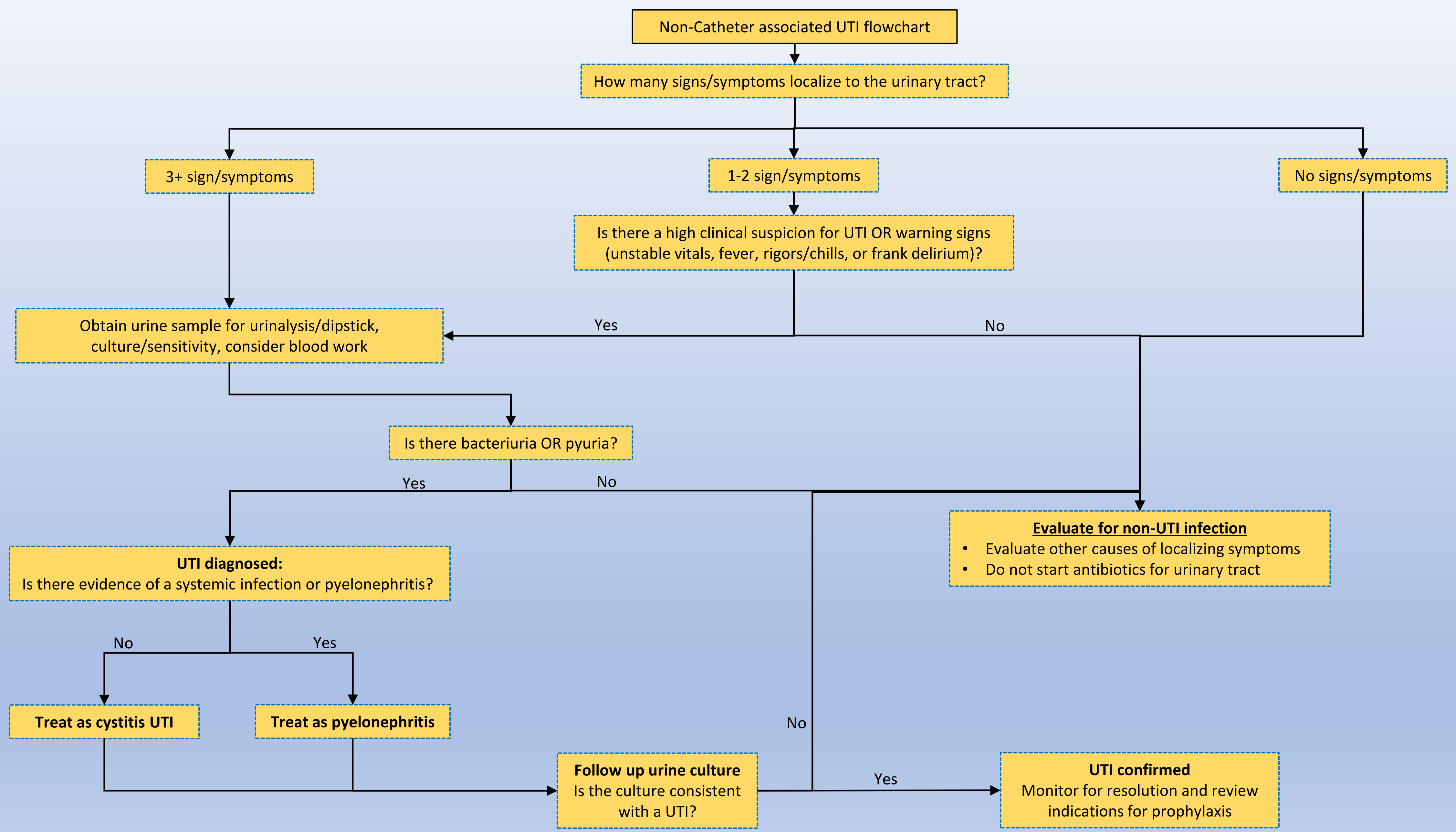
UTI Main Flowchart

UTI Flowchart

CA-UTI Flowchart



How many signs/symptoms localize to the urinary tract?

Pearl: Symptoms such as change in cognition, agitation/aggression, decreased appetite, nausea +/- vomiting, syncope and falls are NOT symptoms of UTI in older adults in the absence of genitourinary tract specific signs and symptoms.

Genitourinary Localizing Sign or symptom	Positive Likelihood Ratio	Negative Likelihood Ratio
❑ Back pain	1.6 (1.2 - 2.1)	0.8 (0.7 – 0.9)
❑ Costovertebral tenderness	1.7 (1.1 - 2.5)	0.9 (0.8 – 1.0)
❑ Dysuria	1.5 (1.2 - 2.0)	0.5 (0.3 – 0.7)
❑ Frequency	1.8 (1.1 – 3.0)	0.6 (0.4 – 1.0)
❑ Flank pain (between epigastrium and back)	1.1 (0.9 - 1.4)	0.9 (0.9 – 1.0)
❑ Hematuria	2.0 (1.3 – 2.9)	0.9 (0.9 - 1.0)
❑ Suprapubic pain	1.1 (0.9 – 1.4)	0.9 (0.8 - 1.1)
❑ Urethral meatus purulence	Not available	Not available
❑ Urgency OR Incontinence	Not available	Not available

Click for more on localizing signs and symptoms of a UTI

Pearl: The combination of 3+ signs or symptoms that localize the urinary tract* significantly increases the pretest probability of a true UTI

The need for 3 or more signs and symptoms is an arbitrary cutoff extrapolated from adult women from the JAMA review. It emphasizes that more localizing signs and symptoms are more likely to represent a true UTI

The degree of increased pretest probability depends on the specific combination of symptoms

*Localizing symptoms should not be better explained by another etiology. For example:
- Acute frequency in the setting of new diuretic
- Acute hematuria in setting of recent traumatic catheterization

1-2 sign/symptoms

Pearl: **The combination of 1-2 signs or symptoms that localize the urinary tract* improves the probability of a true UTI, but not to the extent of 3+**

The degree of increased pretest probability depends on the specific combination of symptoms

The need for 3 or more signs and symptoms is an arbitrary cutoff extrapolated from adult women from the JAMA review. It emphasizes that more localizing signs and symptoms are more likely to represent a true UTI

*Localizing symptoms should not be better explained by another etiology. For example:

- Acute frequency in the setting of new diuretic
- Acute hematuria in setting of recent traumatic catheterization

No signs/symptoms

What are not localizing signs/symptoms?

- Dark, cloudy, or foul-smelling urine
- Non-specific signs and symptoms such as change in cognition, agitation/aggregation, decreased appetite, nausea/vomiting, syncope, and falls

Remember that frail older adults are increasingly vulnerable to ANY stress/illness (homestenosis) and often manifest with nonspecific signs and symptoms. Those signs/symptoms overlap with what has traditionally been associated with UTIs.

Click for more on the lack of genitourinary localizing signs and symptoms

Pearl: The presence of high-risk features serve to lower the treatment threshold for CA-UTI.

The presence of high-risk features lower the treatment threshold. High risk features:

- ❑ Fever lasting 24 hours or more
- ❑ Rigors or shaking chills
- ❑ Clear cut delirium (not just change in mental status) after ruling out other causes - please see Delirium Guide

Alternatively, having 1-2 compelling localizing signs/symptoms (not otherwise better explained) may strongly suggest a true UTI. For example, acute hematuria with urinary frequency are strongly suggestive of a UTI while flank pain alone is less suggestive.

Obtain urine sample for urinalysis/dipstick, culture/sensitivity, consider blood work

PEARL – The absence of epithelial cells suggests a good, uncontaminated sample. In men, it is recommended to clean the urethral meatus before collection.

Obtain a midstream/clean catch urine specimen

If unable to get a midstream/clean catch urine specimen due to mentation:

- Men: Consider a condom catheter for 30-120 minutes or in and out catheterization
- Women: Consider in and out catheterization

Blood work can be considered if systemic or complicated features present

Source: JAMDA Consensus - Collecting Urine from People with and without Urinary Catheters

Is there bacteriuria OR pyuria?

PEARL: The presence of bacteriuria and pyuria supports but is not diagnostic alone of a UTI while the absence of both RULES OUT a UTI

The presence of bacteriuria/leukocyte esterase and/or pyuria/nitrites has a positive predictive value of only 45%.

The absence of bacteriuria/leukocyte esterase AND pyuria/nitrites has a negative predictive value of 100%

However, to make a definitive diagnosis, bacteria needs to be detected on urine culture.

Source: JAMDA Consensus – Diagnostic Testing for UTIs

UTI diagnosed:
Is there evidence of a systemic infection or pyelonephritis?

- ❑ Costovertebral tenderness or back pain
- ❑ Fever
  - ❑ Defined as oral temp of 37.8°C (100°F)
  - ❑ OR repeated measurements above 37.2°C (99°F)
  - ❑ OR increase of 1.1°C (2°F) over baseline
- ❑ Rigors/shaking chills
- ❑ Nausea +/- vomiting

If these features are present, there is concern for an upper urinary infection such as pyelonephritis which would change antibiotic management.

Treat as cystitis UTI

1. Encourage hydration
2. Review prior sensitivities for empiric antibiotics or local antibiogram
3. Start antibiotics using selection guide

Click for more on the treatment of UTI

Treat as pyelonephritis

1. Encourage hydration
2. Review prior sensitivities for empiric antibiotics or local antibiogram
3. Start antibiotics using selection guide

Click for more on the treatment of UTI

PEARL: "Significant" bacteriuria varies and is arbitrarily used to suggest the bacterial growth is not a result of contamination. A higher cutoff makes it less likely to be the result of contamination.

If there is **no** growth of bacteria in a properly collected urine specimen, this absence calls into question the diagnosis of a UTI (regardless of the presence of pyuria, hematuria).

Certain diagnostic criteria require the presence of "significant bacteriuria" while most decision aids do not.

"Significant" bacteriuria varies and is arbitrary.

- Common cutoffs: 100+ colony forming units for in-and-out catheterization and >100,000+ colony forming units in a midstream.
- A higher colony forming unit cutoff makes it less likely to be the result of contamination during the collection process. (*JAGS Urinary Tract Infection– "Significant Bacteriuria"*)
- However, there is no threshold colony count that identifies who is more likely to become ill or to benefit from antibiotic treatment.

Follow up urine culture
Is the culture consistent with a UTI?

Pearl: A non catheter associated UTI is defined as the presence of signs or symptoms compatible with UTI and significant bacteriuria* with no more than 2 species.

"Significant" bacteriuria varies and is arbitrary. Cutoffs of 100+ colony forming units for in-and-out catheterization and >100,000+ colony forming units in a midstream have been proposed. Ultimately, a higher colony forming unit cutoff makes it less likely to be the result of but does not identify who is more likely to become ill or to benefit from antibiotic treatment.

The diagnosis is now confirmed!

Monitoring

- Patients should improve within 48-72 hours. Failure to improve should prompt evaluation for complicating factors and imaging (such as CT A/P or renal US)
- Deescalate/narrow antibiotics as able based on clinical status and susceptibilities

Prophylaxis

- Best evidence is for treating atrophic vaginitis with estrogen.

Click for more for UTI diagnosis, monitoring, and prophylaxis

UTI confirmed
Monitor for resolution and review indications for prophylaxis

PEARL – Up to 50% of older adults in long term care facilities will be colonized and bacteriuric. In the absence of symptoms, this does not indicate a UTI and often represents asymptomatic bacteriuria

- Do not start antibiotics for urinary tract. See AGS Choosing Wisely, consider printing patient information
- Evaluate other causes of symptoms
- Reconsider if:
    - new symptoms arise
    - existing symptoms do not resolve
    - no other etiology for symptoms is found after comprehensive evaluation
- If in hospital or long-term care, implement vital sign monitoring paying attention to hydration status and repeated physical exam

Click for more for UTI diagnosis, monitoring, and prophylaxis

Evaluate for non-UTI infection

- Evaluate other causes of localizing symptoms
- Do not start antibiotics for urinary tract