Management of Recurrent Urinary Tract Infections

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Disclosures

- I have no relevant financial relationships or disclosures

Objectives

- To understand diagnosis of recurrent UTI
- To evaluate patients for treatable sources of recurrent UTI
- To review evidence-based treatments for recurrent UTI

2019 Recurrent UTI Guidelines

The American/Canadian Urologic Associations and Society for Urodynamics guidelines

- Index patient is an otherwise healthy, medically uncomplicated adult
- Uncomplicated excludes:
  - Pregnancy
  - Immunocompromised state
  - Anatomic or functional abnormalities of the urinary tract
  - Infection due to CIC or indwelling catheter
  - Signs or symptoms of systemic bacteremia (fever, flank pain)

Definitions:

- Acute bacterial cystitis
  - Culture-proven infection associated with acute-onset symptoms such as dysuria in conjunction with variable degrees of increased urinary urgency and frequency, hematuria and new or worsening incontinence
- Uncomplicated urinary tract infection
  - An infection of the urinary tract in a healthy patient with an anatomically and functionally normal urinary tract and no known factors that would make her susceptible to develop a UTI

Definitions:

- Recurrent urinary tract infection
  - Two separate culture-proven episodes of acute bacterial cystitis and associated symptoms within six months or three episodes within one year
  - Requires separate infections with symptom resolution between episodes
  - Does not include infections requiring multiple courses of treatment for symptom relief
- Asymptomatic bacteriuria
  - The presence of bacteria in the urine that causes no illness or symptoms

Evaluation:

1. Clinicians should obtain a complete patient history and perform a physical examination in women presenting with rUTIs.
2. To make a diagnosis of rUTI, clinicians must document positive urine cultures associated with prior symptomatic episodes.
3. Clinicians should obtain repeat urine studies when an initial urine specimen is suspect for contamination, with consideration for obtaining a catheterized specimen.
4. Cystoscopy and upper tract imaging should not be routinely obtained in the index patient presenting with rUTI.

Evaluation:

5. Clinicians should obtain urinalysis, urine culture, and sensitivity with each symptomatic acute cystitis episode prior to initiating treatment in patients with rUTIs.
6. Clinicians may offer patient-initiated treatment (self-start treatment) to select rUTI patients with acute episodes while awaiting urine cultures.
7. Clinicians should omit surveillance urine testing, including urine culture, in asymptomatic patients with rUTIs.
8. Clinicians should not treat asymptomatic bacteriuria in patients.

Evaluation:

9. Clinicians should use first-line therapy dependent on the local antibiogram for the treatment of symptomatic UTIs in women.
10. Clinicians should treat rUTI patients experiencing acute cystitis episodes with a short duration of antibiotics as reasonable, generally no longer than 7 days.
11. In patients with rUTIs experiencing acute cystitis episodes associated with urine cultures resistant to oral antibiotics, clinicians may treat with culture-directed parenteral antibiotics for as short a course as reasonable, generally no longer than 7 days.

First-line therapy for the treatment of uncomplicated symptomatic UTI

Treatment effects	Nitrofurantoin	TMP-SMX	Fosfomycin
Cure rate	88-93%	90-100%	83-91%
Antimicrobial spectrum	narrow: *E. coli, S. saprophyticus*	typical uropathogens	Covers VRE, ESBL GNRs
Collateral damage	No	Minimal	No
Resistance	Low, stable X 50y	Increasing	Currently low
Dose & duration	100 mg BID X 5d	One DS BID X 3d	3 g single dose

Antibiotic Prophylaxis

12. Following discussion of the risks, benefits, and alternatives, clinicians my prescribe antibiotic prophylaxis to decrease the risk of future UTIs in women of all ages previously diagnosed with UTIs.

Continuous prophylaxis

TMP 100mg daily
TMP-SMX 40mg/200mg once daily
TMP-SMX 40mg/200mg thrice daily
Nitrofurantoin 50mg daily
Nitrofurantoin 100mg daily
Cephalexin 125mg daily
Cephalexin 250mg daily
Fosfomycin 3g every 10 days

Post-coital prophylaxis

TMP-SMX 40mg/200mg
TMP-SMX 80mg/400mg
Nitrofurantoin 50-100mg
Nitrofurantoin 100mg
Cephalexin 250mg

Non-Antibiotic Prophylaxis

13. Clinicians may offer cranberry prophylaxis for women with rUTI

Possible Value

Increased water intake

Unable to Recommend

Lactobacillus / Probiotics
D-mannose
Methenamine
Herbal therapies
Intravesical hyaluronic acid
Biofeedback

Follow-up Evaluation:

1. Clinicians should not perform a post-treatment test of cure urinalysis or urine culture in asymptomatic patients.
2. Clinicians should repeat urine cultures to guide further management when UTI symptoms persist following antimicrobial therapy.

Estrogen:

In peri- and post-menopausal women with rUTIs, clinicians should recommend vaginal estrogen therapy to reduce the risk of future UTIs if there is no contraindication to estrogen therapy.

Falling estrogen levels

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Changes in the vaginal epithelium

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Lactobacilli fail to thrive

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Vaginal pH rises to 7

↓

E. Coli and other harmful bacteria colonize the vagina

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Ascending bladder infections

AUA Treatment Algorithm

Complicating Factors

History and Physical Exam
- Confirm UTI diagnosis
- Obtain urinalysis and culture
- Perform pelvic exam

Additional Investigation
- Cystoscopy
- Upper tract imaging
- Urodynamics

Confirmed Diagnosis of Recurrent Uncomplicated UTI

Treatment of Underlying Abnormality

Prior to the determination of a management plan, the clinician and patient should engage in a shared decision-making process that includes a discussion of the risks and benefits of each options

AUA Treatment Algorithm

Confirmed Diagnosis

Prophylaxis

Non-Antibiotic Prophylaxis
- Cranberry
- Behavioral modification

Vaginal Estrogen
- Peri/Postmenopausal

Antibiotic Prophylaxis
- Continuous < 12 months
- Intermittent

Antibiotic Treatment

Self-Start Therapy
- Reliable/compliant

Episodic
- First-line drugs
- Short duration

Resistance
- Culture-directed parenteral antibiotics

Case Presentations

Case 1

36 year old female

CC: recurrent UTIs

History:

- UTIs are ongoing for several years
- She checks her urine at home with store-bought dipsticks
- She is treated with antibiotics either from her PCP, gyn, or urgent care
- "They always check my urine"
- Mother has history of rUTI and is on a daily antibiotic, requests an antibiotic
- Otherwise healthy
- Sexually active (Condoms)
- Normal exam

Clinical questions:

- What are her risk factors for recurrent UTIs?
  - Are they modifiable?
- Can we give her a daily antibiotic without cultures?
- What about home dip sticks?
- What about office UA?

Patient Counseling/Management

- Education:
  - Hygiene
  - Antibiotic stewardship
  - Test of cure
  - Risk Factors
  - Importance of urine cultures
- Standing order for urine culture
- Care with one provider
- Prevention measures:
  - Antibiotics
  - Cranberry
  - Water intake

Risk factors for recurrent UTI:

- Family history
- Spermicide use
- Recent sexual intercourse

Case 2

80 year old female

CC: recurrent UTIs

History:

-Lives in a nursing facility

-Not sexually active

-Struggles with urinary incontinence / Occasional fecal incontinence

-UTIs are treated with escalating doses of antibiotics, most recently x 2 weeks

-Cultures always positive for same organism and show escalating resistance

-Exam: Vaginal atrophy, normal support

Clinical questions:

- What are her risk factors for recurrent UTIs?
  - Are they modifiable?
- Is this patient “complicated”?
  - Does she need imaging?
  - What might imaging show?

Patient Counseling/Management

- Education:
  - Hygiene
  - Atrophy
  - Antibiotic stewardship
  - Importance of urine cultures
- Standing order for urine culture
- Care with one provider
- Prevention measures:
  - Hygiene
  - Estrogen
  - Cranberry
  - Water intake
  - Methenamine/D-Mannose
  - Antibiotics

Risk factors for recurrent UTI:

- Post-menopausal status
- Urinary incontinence
- Fecal incontinence
- Functional disability

Case 3

72 year old female CC: My Urologist said I need my bladder prolapse repaired

History:

-HTN, osteoporosis, hyperlipidemia

-Not sexually active

-UTIs are culture-proven

-Exam: Stage 3 anterior vaginal prolapse, vaginal atrophy

-Office PVR 10 mL

Clinical questions:

- What are her risk factors for recurrent UTIs?
  - Are they modifiable?
- Is the prolapse the cause of her UTIs?

Patient Counseling/Management

- Education:
  - Atrophy
  - Potential impact of prolapse
- Standing order for urine culture
- Care with one provider
- Assessment:
  - Emptying function
- Prevention measures:
  - Address emptying prn
  - Estrogen
  - Cranberry
  - Water intake
  - Methenamine/D-Mannose
  - Antibiotics

Risk factors for recurrent UTI:

- Post-menopausal status
- Anterior compartment prolapse

Case 4

55 year old female

CC: recurrent UTIs

History:

-Sexually active; peri-menopausal

-UTIs are sometimes associated with intercourse

-Variable symptoms response to antibiotics

-1 positive culture (10-50k E coli), 2 negative cultures

-Exam: Vaginal atrophy, normal support

-Normal office PVR

Clinical questions:

- Does she have recurrent UTIs?
- What are her risk factors for rUTI?
  - Are they modifiable?
- How should she be managed?

Patient Counseling/Management

- Education:
  - Importance of urine cultures
  - GSM, OAB, BPS
  - Atrophy
  - Antibiotic stewardship
- Standing order for urine culture
- Care with one provider
- Prevention measures:
  - Keeping a diary
  - Estrogen
  - Cranberry
  - Water intake
  - Methenamine/D-Mannose
  - Antibiotics

Risk factors for recurrent UTI:

- Peri-menopausal status
- Sexually active

Case 5

82 year old female CC: Positive TOC urine cultures despite appropriate tx

History:

-Multiple positive urine cultures: Klebsiella, E coli, Enterobacter

-Exam: Vaginal atrophy, normal support

-Normal office PVR

-Normal cystoscopy and CT urogram

Clinical questions:

- What are the patient's symptoms?
- What are the appropriate treatment options?
- What are the risks of antibiotic use?

Patient Counseling/Management

- Education:
  - Concept of carrier status
  - Importance of urine cultures done with symptoms
  - Unresponsive to appropriate care some imaging appropriate
- Care with one provider
- Prevention measures:
  - Hygiene
  - Estrogen
  - Cranberry
  - Water intake
  - Methenamine/D-Mannose

Risk factors for recurrent UTI:

- Post-menopausal status