

Asymptomatic Bacteriuria: Adult

Gastrointestinal

Clinical Decision Tools for RNs with Additional Authorized Practice [RN(AAP)s]

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Background

Asymptomatic bacteriuria is the presence of bacteria--detected in an appropriately collected urine specimen--with the absence of signs and symptoms of a urinary tract infection (UTI) (Huether, 2019). Asymptomatic bacteriuria is a common finding in healthy females, and in females and males with abnormalities of the genitourinary (GU) tract (Nicolle, 2016).

Common bacterial pathogens include *Klebsiella pneumoniae*, coagulase-negative staphylococci, group B streptococci, Enterococcus, *Gardnerella vaginalis*, gram-negative bacilli, *Pseudomonas aeruginosa*, *Proteus mirabilis*, *Morganella morganii*, and *Providencia stuartii* (Huether, 2019). Treatment of asymptomatic bacteriuria is indicated for the prenatal population (prevent premature labour) and for clients who are having endoscopic urologic surgery (prevent sepsis) (Fekete & Hooton, 2019; Nicolle et al., 2019).

Immediate Consultation Requirements

The RN(AAP) should seek immediate consultation from a physician/NP when any of the following circumstances exist:

- frail elderly with delirium, or
- recurrent episodes or treatment failure in pregnancy (Interprofessional Advisory Group [IPAG], personal communication, October 2, 2019).

Predisposing and Risk Factors

Predisposing and risk factors for asymptomatic bacteriuria in adult clients include:

- diabetes (particularly females),
- older age,
- sexual activity,

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- female anatomy (more common in women because the urethra is short and located close to the vagina),
- postmenopausal females,
- males engaging in anal intercourse,
- bladder outlet obstruction (e.g., prostatic hyperplasia),
- urinary tract instrumentation,
- indwelling catheters,
- spinal cord injury, and/or
- pregnancy (Nicolle, 2016).

Health History and Physical Exam

Subjective Findings

There are typically no urinary complaints associated with asymptomatic bacteriuria as the condition is usually discovered on routine examination of urine via a urine culture (Huether, 2019).

Objective Findings

There are typically no signs and symptoms associated with asymptomatic bacteriuria (Huether, 2019).

Differential Diagnosis

The following should be considered as part of the differential diagnosis:

- cervicitis;
- sexually transmitted GU infections;
- cystitis, non-bacterial;
- ectopic pregnancy;
- interstitial cystitis;
- nephrolithiasis;
- urethritis;
- atrophic vaginitis; or
- enlarged or inflamed prostate (Huether, 2019).

Making the Diagnosis

Diagnosis of asymptomatic bacteriuria in adults is made based on the absence of signs or symptoms of a urinary tract infection and the presence of bacteria in urine culture at the following levels:

- In women, asymptomatic bacteriuria is demonstrated by more than 100,000 (10⁵) colony forming unit (CFU)/mL of a single bacterial species cultured in two successive midstream urine specimens obtained several days apart (Nicolle, 2016).

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- In men, asymptomatic bacteriuria is demonstrated by more than 100,000 (10⁵) CFU/mL of a single bacterial species in a single urine specimen (Nicolle, 2016).
- In catheterized clients, asymptomatic bacteriuria is demonstrated by more than 100,000 (10⁵) CFU/mL of a single bacterial species in a single urine specimen because biofilms may contaminate urine specimens collected through the indwelling catheters (Nicolle, 2016).
- For specimens obtained using an 'in and out' catheter, including intermittent catheterization, asymptomatic bacteriuria is demonstrated by more than 100 (10²) CFU/ml of a single bacterial species as there is no biofilm (Nicolle, 2016).

Investigations and Diagnostic Tests

A urine culture to screen for asymptomatic bacteriuria is appropriate for pregnant clients (12-16 weeks gestation), and clients undergoing endoscopic urologic procedures associated with mucosal trauma (e.g., transurethral resection of the prostate, bladder, ureteroscopy, or percutaneous stone surgery) (Anti-infective Review Panel, 2019; Moore et al., 2018; Nicolle et al., 2019).

Management and Interventions

Goals of Treatment

The primary goals of immediate treatment are to recognize the significance of asymptomatic bacteriuria in the previously identified populations; eradicate bacteria from GU tract in pregnant women to reduce complications; and eradicate bacteria from GU tract in clients undergoing invasive urologic procedures where mucosal trauma is expected (Moore et al., 2018; Nicolle et al., 2019). Avoid treating all other clients to decrease the potential for antibiotic resistance.

Non-Pharmacological Interventions

The RN(AAP) should recommend adequate fluid intake to flush bacteria from the bladder and prevent stasis of urine (six to eight glasses of fluid per day).

Pharmacological Interventions

The pharmacological interventions recommended for the treatment of asymptomatic bacteriuria are in accordance with the *Anti-infective Guidelines for Community-acquired Infections* (Anti-infective Review Panel, 2019) and the *RxFiles: Drug comparison charts* (RxFiles Academic Detailing Program, 2021).

Treat all pregnant women to ensure resolution of bacteriuria. Treatment should be guided by the results of urine culture and sensitivity (Moore et al., 2018). Do not prescribe Sulfamethoxazole-Trimethoprim during the first trimester and last six weeks of pregnancy. Do not prescribe nitrofurantoin after 35 weeks gestation.

Oral Antibiotics

Therapy is provided to prenatal clients and those undergoing invasive genitourinary endoscopic treatments (e.g., cystoscopy).

	Drug	Dose	Route	Frequency	Duration
Adult (First line therapy)					
	Amoxicillin	500 mg	p.o.	q8h	3 to 7 days
OR	Nitrofurantoin (Macrobid)	100 mg	p.o.	b.i.d.	5-7 days
OR	Sulfamethoxazole -Trimethoprim	400/80 mg, 2 tabs	p.o.	b.i.d.	3-7 days
OR	Sulfamethoxazole -Trimethoprim	1 tablet (800/160 mg)	p.o.	b.i.d.	3-7 days
OR	Trimethoprim	100 mg	p.o.	b.i.d.	3-7 days
OR	Trimethoprim	200 mg	p.o.	o.d.	3-7 days
OR	Fosfomycin	3 g mixed in ½ cup water	p.o.	once	n/a
Adult (Second line therapy, to be used if allergies or contraindications related to gestation)					
	Cephalexin	250 to 500 mg	p.o.	q.i.d.	3-7 days
OR	Amoxicillin/Clavulanate	500 mg	p.o.	t.i.d.	3-7 days
OR	Amoxicillin/Clavulanate	875 mg bid	p.o.	t.i.d.	3-7 days

Client and Caregiver Education

The RN(AAP) provides client and caregiver education:

- Counsel about the appropriate use of medications (dose, frequency, compliance, etc.).
- Instruct female clients about proper hygiene (wiping from front to back).
- Instruct about signs and symptoms of acute infection and advise client to return to the clinic if these occur.
- Reinforce the importance of proper hydration.
- Recommend showers rather than bathing and avoidance of prolonged immersion in water (e.g., hot tubs, swimming pool) (Moore et al., 2018; Nicolle et al., 2019).

Monitoring and Follow-Up

Pregnant clients should have a follow-up midstream urine for culture and sensitivity one week post-treatment and a repeat culture and sensitivity monthly (Hooton & Gupta, 2019). Re-treat, if necessary, based on the susceptibility report with either a longer duration of the same antibiotic or a different one. Discuss persistent positive cultures with a physician/NP.

Complications

Complications that may be associated with asymptomatic bacteriuria in pregnancy are preterm birth, low birth weight infants, pyelonephritis, and perinatal mortality (Moore et al., 2018; Nicolle et al., 2019).

Complications that may be associated with asymptomatic bacteriuria following endoscopic urologic surgery are febrile urinary tract infection or sepsis (Nicolle et al., 2019).

Referral

Refer to a physician/NP if client presentation is consistent with those identified in the *Immediate Consultation Requirements* section. (IPAG, personal communication, October 2, 2019).

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