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CPG G4

CLINICAL MANAGEMENT OF UNCOMPLICATED URINARY TRACT INFECTIONS

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SCOPE OF PRACTICE

TARGET POPULATION

- Clients with uncomplicated urinary tract infections (UTI)
- Clients with a presumptive clinical diagnosis of uncomplicated UTI from clinical presentation

EXCLUSION CRITERIA

- Clients with ongoing urological issues
- Clients with complications of infection
- Clients presenting with persistent symptoms post treatment
- Clients who are pregnant or breastfeeding

GUIDELINE OBJECTIVES AND ANTICIPATED OUTCOMES

- Provide treatment for symptomatic clients
- Identification of individual STI risk and provision of appropriate screening
- Identify public health risks to control infections by:
 - Provision of STI education and information
 - Identification and exploration of sexual risk taking behaviours
 - Test of reinfection/test of cure where appropriate
 - Monitoring antimicrobial resistance

BACKGROUND

CONDITION DESCRIPTION

Urinary tract infections (UTIs) are common and are the most frequently encountered of all the bacterial infections both in the community and hospital setting.¹ UTIs are classified as uncomplicated and complicated. UTIs include cystitis, pyelonephritis and renal abscess.¹ The urinary system is designed to minimise the risk of serious infection in the kidneys by preventing the urine from flowing back up into the kidneys from the bladder. The majority of urinary infections are confined to the bladder and, while causing important symptoms, are not serious or life threatening.^{1,2} Cystitis is defined as clinical illness caused by inflammation of the bladder epithelium or urethra. Pyelonephritis is a clinical syndrome of flank pain, fever, chills caused by bacterial invasion of renal parenchyma.^{1,2} The ascending route of infection accounts for more than 90% of infections. Bacteria travels from the urethra to the bladder and in the case of pyelonephritis ascend the ureter to the kidney.^{1,2}

- Complicated UTIs are found in clients with underlying renal structural abnormalities or metabolic abnormalities^{1,2}
- Uncomplicated UTIs include episodes of cystitis or pyelonephritis in otherwise healthy non pregnant clients^{1,2}

EPIDEMIOLOGY

Around 250,000 Australians are affected every year.⁵

In women micro-organisms causing initial and recurrent infections are usually coliform bacteria that colonise the vaginal introitus, the urethra and subsequently the bladder.^{2,3}

In men the prostate plays a significant role in recurrent UTIs.¹ *Escherichia coli* is the most common pathogen causing UTIs in men and women. *Staphylococcus saprophyticus* accounts for most cases of cystitis.^{1,2,3} Other organisms include *Proteus*, *Klebsiella*, *enterococci*, *pseudomonas*, mixed bacteria and yeasts.¹

COMMON CAUSITIVE FACTORS OF UTIS

- *Escherichia coli* 70-95%
- *Staphylococcus saprophyticus* 5-10%
- *Proteus mirabilis*

Table G4.1: Common Causes of UTIs^{1,2,3}

Most uncomplicated UTIs occur in otherwise healthy, and sexually active, women.^{2,4}

Contamination of the urinary tract occurs more often in women than in men, because the urethra is shorter and closer to the sources of bacteria, the anus and the vagina.^{1,2}

It is important to distinguish between urethritis and cystitis, particularly in sexual active population. Many women with vaginitis or herpes will have symptoms of external dysuria; burning felt on the labia when urine makes contact during voiding. Women with urethritis and or cystitis more often have internal dysuria, that is, dysuria felt deeper inside the urogenital tract.⁶

HOST DEFENCE

- Complete bladder emptying
- Intact vesicourethral valve
- Length of urethra
- Vaginal flora

HOST PREDISPOSITION

- Urinary tract abnormalities such as obstruction
- Vessicoureteric reflux
- Incomplete bladder emptying
- Foreign bodies
- Systemic disease such as diabetes

Table G4.2: Host factors^{1,2,3}

CLINICAL INDICATORS

- Dysuria
- Urinary frequency/urgency
- Hematuria
- Urine odour
- Nocturia
- Suprapubic discomfort or lower abdominal pain

PAST HISTORY

- Urological surgery
- Diabetes
- Immunosuppression
- Urinary incontinence
- Pregnancy
- Drug treatments or radio therapy
- New sexual partner

Table G4.3: Clinical indicators^{1,2,3}

RECURRENT UTI^{3,5}

- Usually caused by reinfection
- New infection with new organism
- Relapse
- Recrudescence of prior partially treated infection
- Reinfection is common in adult women and may not indicate underlying urological abnormality
- Relapsing UTI in men raises the possibility of underlying chronic prostatitis or renal structural abnormalities

INVESTIGATIONS AND DIAGNOSIS

URINALYSIS (MID STREAM URINE SPECIMEN) ^{1,3,5,6,7}

- Pyuria is defined as the presence of >10 WBC per ml
- Hematuria is defined as more than 2-4 red blood cells per high power field
- Proteinuria is common in UTI
- Mid stream urine for culture and sensitivity studies is recommended if urinalysis is positive

DIAGNOSTIC CHARACTERISTICS OF CYSTITIS	
HISTORY	<ul style="list-style-type: none"> • Internal dysuria • Frequency • Urgency • Hesitancy • Nocturia • Slow stream • Occasional blood stained urine • Acute onset • Short duration <4 days • Previous cystitis
EXAM	<ul style="list-style-type: none"> • Suprapubic or bladder tenderness
URINALYSIS	<ul style="list-style-type: none"> • Pyuria: bacteriuria in most cases and hematuria in some cases
URINE CULTURES	<ul style="list-style-type: none"> • $\geq 10^3$/ml/single organism
URETHRAL/CERVICAL CULTURE	<ul style="list-style-type: none"> • Negative

Table G4.4: Diagnostic characteristics ^{3,5,6,7}

If urine cultures are obtained, $\geq 10^3$ colony count of a single uropathogenic organism (*E.coli*, *S.Saprophyticus*, *Proteus* spp.) supports the diagnosis of UTI. ^{5,6,7} The presence of squamous epithelial cells indicates poor specimen collection and reduces the diagnostic value of the test. ^{3,5,6,7} Mixed organisms on the urine culture may indicate a possible contaminated specimen, but can still indicate UTI if there is a predominant organism with $\geq 10^3$ colony count. ^{5,6}

TREATMENT AND MANAGEMENT

TREATMENT INDICATORS

- Clinical diagnosis based on examination findings
- Laboratory confirmed diagnosis

TREATMENT

- **Trimethoprim 300 mg orally; daily for 3 days**

MANAGEMENT ^{7,10,11}

- Trimethoprim is given at night to maximise urinary concentration
- OCP interaction, additional contraception should be discussed
- Complete course of antibiotics as instructed
- Increase hydration
- Promote complete emptying of the bladder
- Avoid diuretics such as caffeine
- Take medication with food to reduce GI disturbances
- Provide client information
- Promotion of condom use

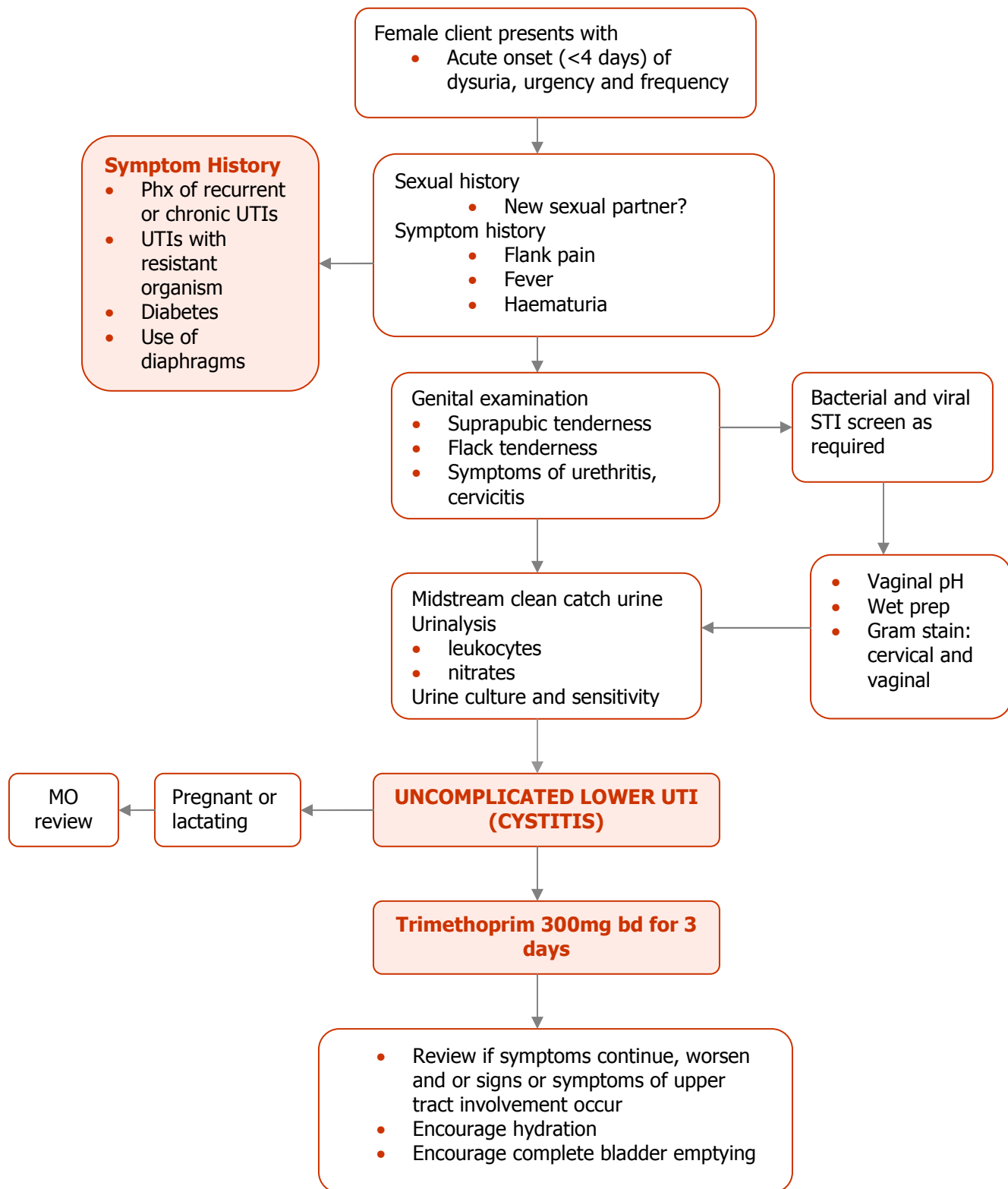
PUBLIC HEALTH CONSIDERATIONS - FOLLOW UP AND REVIEW

- Women given empiric antimicrobials for acute cystitis should return PRN if symptoms persist or recur
- Delay in treatment or inappropriate treatment of cystitis may lead to development of acute pyelonephritis
- Treatment failures are usually due to a resistant organism, re-infection with a similar organism or an unsuspected underlying abnormality of the urinary tract which requires MO review and further investigation

MEDICATION FORMULARY ^{10,11}

DRUG	INDICATIONS	ROUTE	DOSE	FREQUENCY	THERAPEUTIC CLASS/ Poisons Schedule	CONTRAINDICATIONS/ INTERACTIONS	PRECAUTIONS/ ADVERSE EFFECTS
Trimethoprim	Uncomplicated lower urinary tract infections	oral	300mg for 3 days	Single daily dose at bedtime	S4 (B3)	Allergy to trimethoprim Severe renal and hepatic impairment Severe haematological disorders. Megaloblastic anaemia	Renal impairment Elderly Pregnancy Folate deficiency
						Oral contraceptive pill Phenytoin, methotrexate, cyclosporine, tacrolimus, warfarin Procainamide, dapsone	Superinfection HIV positive clients

CLINICAL ALGORITHM



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