Doncaster and Bassetlaw Teaching Hospitals
NHS Foundation Trust

URINARY TRACT INFECTIONS

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URINARY TRACT INFECTIONS

The diagnosis of urinary tract infection (UTI) is primarily based on symptoms and signs.

Typical symptoms or signs of lower urinary tract infections (**cystitis**) include dysuria, urinary frequency, urgency, haematuria and suprapubic tenderness but no fever.

Acute upper urinary tract infection (**pyelonephritis**) present with signs of loin pain, flank tenderness, nausea/vomiting, pyrexia, rigors with/without symptoms of a lower UTI.

Urosepsis is defined as sepsis whose source is the urogenital tract. It is most often related to an upper urinary tract infection.

Catheter –associated UTI (CAUTI) is difficult to diagnose. Signs and symptoms compatible with CAUTI include new onset fever or worsening fever, rigors, altered mental status, malaise , or lethargy with no other identified cause; flank pain, costo-vertebral angle tenderness, acute haematuria, pelvic discomfort and in those whose catheters have been removed , dysuria, urgent or frequent urination, or supra-pubic pain or tenderness.

Investigations

- Dipstick screening test for nitrites and leucocyte esterase. **DO NOT use dipstick** testing to diagnose UTI in catheterised patients or patients over 65 years (see also Appendix 1 for diagnostic flow chart for use in patients over 65 years).
- Mid-stream urine (MSU) to be taken before starting antimicrobial treatment.
- Catheter specimen of urine (CSU) **only if the patient has clinical** sepsis, not because the appearance or smell of urine suggests that bacteriuria is present.
- Blood culture in suspected acute pyelonephritis or clinical signs of sepsis or temperature > 38^0C
- For epididymo-orchitis, send a urethral swab for *N. gonorrhoeae* culture and first pass urine or urethral swab for *C.trachomatis* NAAT.
- Renal tract ultrasound for suspected sepsis secondary to acute pyelonephritis (**please note that this investigation is not very sensitive**).

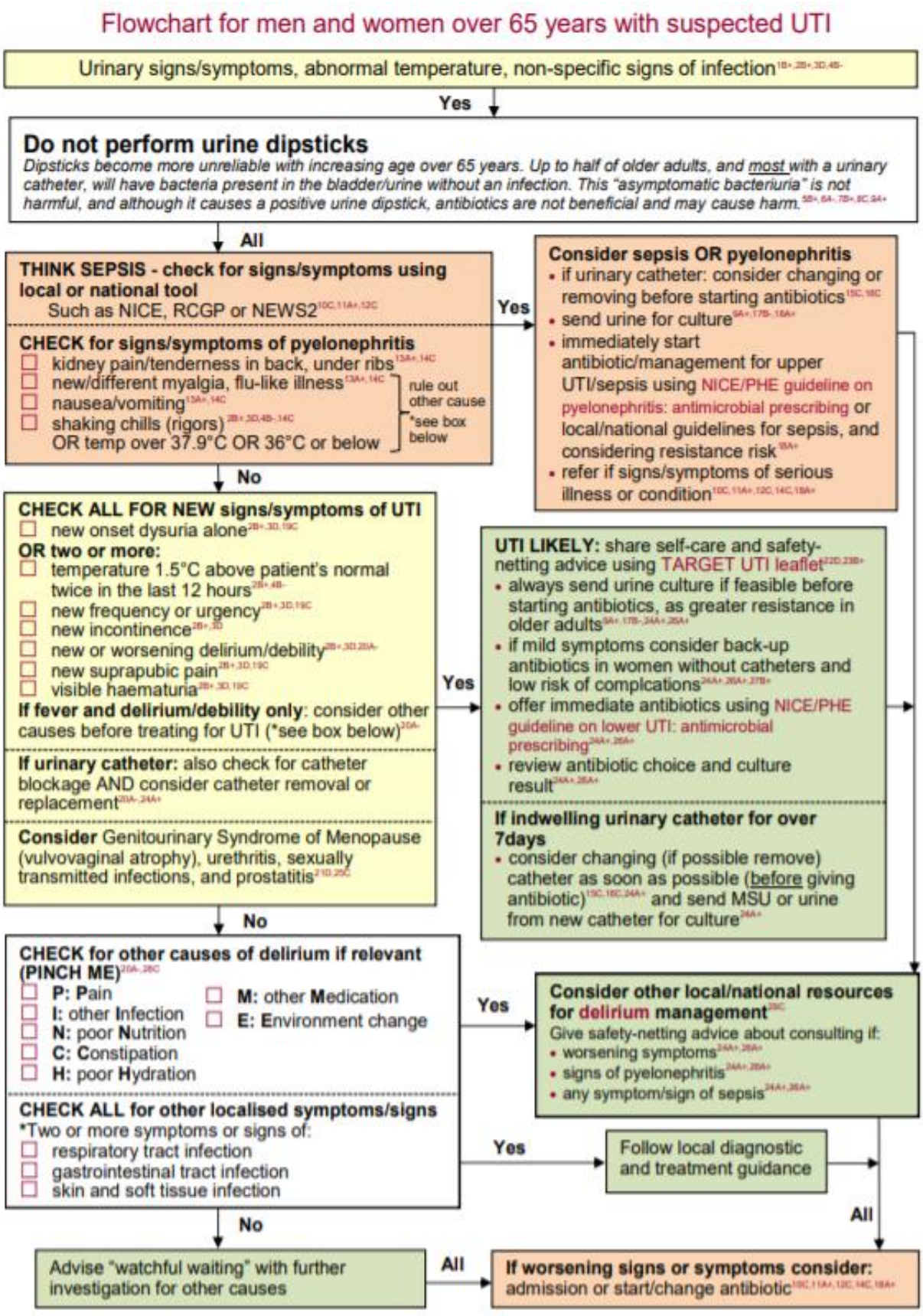
If previously or currently positive for *Clostridium difficile* - discuss with a Microbiologist

INFECTION	EMPIRIC FIRST LINE	EMPIRIC ALTERNATIVE	BASED ON SENSITIVITES	DURATION	NOTES
Asymptomatic bacteriuria (Positive urine culture in the absence of symptoms)	Antibiotics are **NOT** indicated in men and non-pregnant females				Antibiotic treatment is indicated for pregnant women with asymptomatic bacteriuria confirmed by two consecutive urine samples with the same organism (**see next table - below**).
Cystitis in non-pregnant Females	Oral Nitrofurantoin* 50mg 6hrly * avoid if eGFR < 45ml/min * avoid in males where prostatitis is suspected. *avoid in breastfeeding mothers of neonates or premature infants (risk of neonatal haemolysis)	Oral Pivmecillinam‡ 400mg 8hrly ‡Pivmecillinam is a **beta-lactam** antibiotic	**Only if organism is susceptible (based on culture results), use any of the following orally:** Trimethoprim◊ 200mg 12hrly **OR** Amoxicillin 500mg 8hrly **OR** Cefalexin 500mg 8-12hrly ◊ if eGFR between 15-30ml/min – use half dose after 3 days ◊avoid if eGFR < 15 ml/min or CKD ◊ avoid in patients on methotrexate	3 days	If allergic/resistant to 1st line and alternative, please contact the Microbiologist
Cystitis in Males				7 days	

INFECTION	FIRST LINE	ALTERNATIVE	DURATION	NOTES
• **Cystitis in Pregnant Females** • **Asymptomatic bacteriuria in pregnancy**	**1ST & 2ND TRIMESTER ONLY:** Oral Nitrofurantoin* 50mg 6hrly **OR** **3RD TRIMESTER ONLY:** Oral Cefalexin 500mg 12hrly *avoid in the third trimester, may produce neonatal haemolysis	**If organism is susceptible (based on culture results) use any of:** Oral Amoxicillin 500mg 8hrly **OR** **2ND & 3RD TRIMESTER ONLY:** Oral Trimethoprim 200mg 12hrly	7 days	**If allergic/resistant to 1st line and alternative, please contact the Microbiologist** Send MSU 7 days after completion of antibiotic treatment as a test of cure. Give another antibiotic course if infection is not clear
• **Urosepsis including post prostatic biopsy sepsis (refer to sepsis IPOC)** • **Acute pyelonephritis**	IV High dose extended interval Gentamicin *(see policy)* **OR** **Only in suspected/confirmed AKI, severe CKD (CrCl <40 ml/min), or U&E unavailable‡** IV Cefuroxime‡◊ 1.5g tds ‡ If U&E are not available or in suspected AKI, give a stat dose of cefuroxime which should be switched to gentamicin if the renal function is subsequently within the acceptable range (see Gentamicin policy).	Oral alternative should be based on culture results but **AVOID** Nitrofurantoin and Fosfomycin. Contact Microbiology if unsure	Pyelonephritis: 10-14 days Urosepsis: 7-10 days	◊ Contact Microbiology if patient has had a previous 5 day course of Cephalosporins or Co-amoxiclav in the previous 2 weeks. **Please review all IV antibiotics at 48 hours**

INFECTION		FIRST LINE	ALTERNATIVE	DURATION	NOTES	
Catheter- associated UTI (CAUTI)		Catheters will invariably get colonised with bacteria which will continue to multiple over time. Do **NOT** treat catheterised patients with asymptomatic bacteriuria with an antibiotic.	IV High dose extended interval Gentamicin (see policy) **OR** **Only in suspected/confirmed AKI, severe CKD (CrCl <40 ml/min), or U&E unavailable‡** IV Cefuroxime‡◊ 1.5g tds ‡ If U&E are not available or in suspected AKI, give a stat dose of cefuroxime which should be switched to gentamicin if the renal function is subsequently within the acceptable range (see Gentamicin policy).	7 days if prompt resolution 10 days if delayed response 3 days if catheter removed in females ≤65yr and no fever	• Antibiotics only indicated if signs and symptoms compatible with CAUTI. • Susceptibility results, if not reported, are available on request. • **Avoid Nitrofurantoin in these patients.** • Contact Microbiology if patient has had a previous 5 day course of Cephalosporins or Co-amoxiclav in the previous 2 weeks • **Consider removing and replacing catheter within 24 – 48 hours of starting antibiotics.**	
Epididymo-orchitis	Under 35 years	Single dose of Ceftriaxone 500mg IM PLUS Oral Doxycycline 100mg bd	If allergic to Cephalosporins and/or Doxycycline use : Oral Ofloxacin 200mg bd for 14 days	10-14 days	**It is vital that specimens for sensitivity testing are taken prior to antibiotics.**	Usually sexually transmitted in the under 35 years.
	Over 35 years	Ciprofloxacin 500mg bd	Discuss with Microbiologist	10 days		Usually due to enteric organisms in the over 35 years.
Acute Prostatitis		Ciprofloxacin 500mg bd	IV Ceftriaxone 2g once daily OR **(Only if recent urine culture shows susceptible organism)** Trimethoprim 200mg bd	28 days	Send MSU	

Appendix 1



Reference: https://www.gov.uk/government/publications/urinary-tract-infection-diagnosis