ANTIMICROBIAL GUIDELINES

URINARY TRACT INFECTIONS (v2)

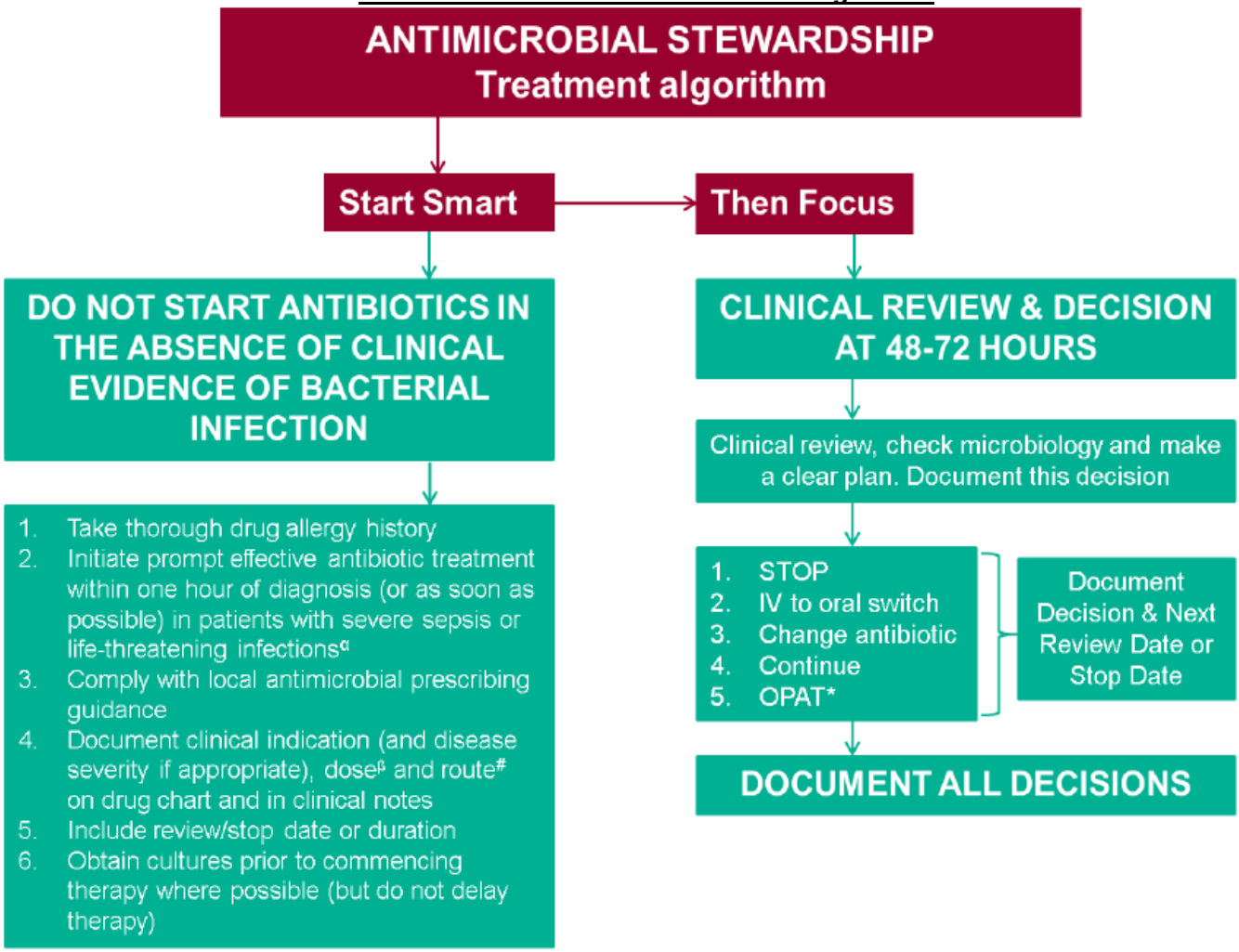
This section covers

- PHE Quick reference guides and flow charts pg 3
- Lower urinary tract infections pg 9
- Acute pyelonephritis pg 14
- Acute prostatitis pg 17
- Catheter associated urinary tract infections pg 19

Start Smart then Focus

A Start Smart - then Focus approach is recommended for all antibiotic prescriptions.

Start Smart then Focus Treatment Algorithm



Fluoroquinolone antibiotics: In March 2019, the MHRA issued restrictions and precautions for the use of fluoroquinolone antibiotics because of rare reports of disabling and potentially long-lasting or irreversible side effects (see Drug Safety Update for details). NICE is currently reviewing recommendations relating to fluoroquinolone antibiotics.

IMPORTANT – Fluoroquinolone Antibiotics (MHRA March 2019)
Systemic (by mouth, injection, or inhalation) fluoroquinolones (Ciprofloxacin, Levofloxacin, Moxifloxacin, Ofloxacin, Delafloxacin) can very rarely cause long-lasting (up to months or years), disabling, and potentially irreversible side effects, sometimes affecting multiple systems, organ classes, and senses

Consideration should be given to official guidance on the appropriate use of antibacterial agents. The new EU restrictions closely align with existing UK national guidance. The restrictions should not prevent use of a fluoroquinolone for serious or severe infections if this is consistent with UK national guidance or where there are microbiological grounds, and where the benefit is thought to outweigh the risk.

If you have any queries on choice of antibiotic please consult a microbiologist

IV Antimicrobials
Prescribing and administration of IV antimicrobials must only happen in services where colleagues are trained and competent to prescribe and administer IV treatments

Version	Change Detail	Date
1	Put in place for new organisation	November 19
2	PHE quick reference flowcharts updated Links to NICE guidance added	March 22

For review February 2025

Based on NICE summary of antimicrobial prescribing guidance – managing common infections
BNF hosts antimicrobial summary guidance on behalf of NICE and PHE - BNF Publications

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PHE quick reference guides

Diagnosis of urinary tract infections - quick reference tool for primary care (publishing.service.gov.uk)

Flow Chart 1
Diagnostic algorithm for the treatment of a suspected UTI in women under 65 years
Flowchart for women under 65 years with suspected UTI (publishing.service.gov.uk)

Flow chart 2
Diagnostic algorithm for the treatment of a suspected UTI in catheterised adults or those over 65 years (click here)
Flowchart for catheterised adults or those over 65 years with suspected UTI (publishing.service.gov.uk)

Flow Chart 3
Diagnostic algorithm for the treatment of a suspected UTI in children under 16 years of age
Flowchart for children under 16 years with suspected UTI (publishing.service.gov.uk)

FLOWCHART 1 **WOMEN (UNDER 65 YEARS) WITH SUSPECTED UTI**

Urinary signs/symptoms

Do not treat asymptomatic bacteriuria in non-pregnant women as it does not reduce mortality or morbidity[3A+,4C]

YES

First exclude vaginal and urethral causes of urinary symptoms:
- ☐ vaginal discharge: 80% do not have UTI[5A+,6A+]
- ☐ urethritis - inflammation post sexual intercourse, irritants[7C]
- ☐ check sexual history to exclude sexually transmitted infections[6A+,7C]
- ☐ genitourinary syndrome of menopause (vulvovaginal atrophy)[7C,8D,9B+]

YES → Follow relevant diagnostic guide and safety-netting

NO

- ☐ **THINK SEPSIS - check for signs/symptoms using local/national tool** such as NICE, RCGP or NEWS2[10C,11A,12C]
- ☐ **check for any new signs/symptoms of pyelonephritis** *see box below

YES → **Consider pyelonephritis or suspected sepsis:**
- send urine for culture[13A+]
- immediately start antibiotic/management for upper UTI/sepsis using NICE/PHE guideline on pyelonephritis: antimicrobial prescribing or local/national guidelines for sepsis[10C,11A,12C,13A+]
- refer if signs or symptoms of serious illness or condition[10C,11A,12C,13A+]

NO

Does patient have any of 3 key diagnostic signs/symptoms?[14B+]
- ☐ **dysuria** (burning pain when passing urine)[5A+,6A+,14B+,15B+,16B+]
- ☐ **new** nocturia (passing urine more often than usual at night)[5A+,14B+]
- ☐ **urine** cloudy to the naked eye[14B+]

2 or 3 symptoms	1 symptom	no

YES (2 or 3 symptoms) → Dipstick not needed

YES (1 symptom) → Perform Urine Dipstick Test

When reading test, follow manufacturer recommended timing and instructions

Are there other urinary symptoms that are severe?
- ☐ urgency[5A+,6A+,15B+]
- ☐ frequency[5A+,6A+]
- ☐ visible haematuria[5A+,6A+]
- ☐ suprapubic tenderness[15B+,17B+]

YES → Perform Urine Dipstick Test

NO → UTI LESS likely

POSITIVE nitrite OR leukocyte and RBC POSITIVE[14B+]	NEGATIVE nitrite POSITIVE leukocyte[14B+]	NEGATIVE for ALL nitrite, leukocyte, RBC[14B+]
YES → UTI likely	YES → UTI equally likely to other diagnosis	YES → UTI LESS likely
Send urine culture if risk of antibiotic resistance or pregnant[18A+] If not pregnant and mild symptoms, watch & wait with back-up antibiotic OR Consider immediate antibiotic (If pregnant always immediate) using NICE/PHE guideline on lower UTI: antimicrobial prescribing [6A+, 18A+, 19B+, 20B+]	Review time of specimen (morning is most reliable) Send urine for culture to confirm diagnosis Consider immediate or back-up antibiotic (if not pregnant) depending on symptom severity using NICE/PHE guideline on lower UTI: antimicrobial prescribing[18A+,19B+,20B+]	No urine culture unless pregnant Reassure that UTI less likely Consider other diagnosis

ALL PATIENTS: share self-care and safety-netting advice using TARGET UTI leaflet

If pregnant always send urine culture – follow national treatment guidelines if any bacteriuria

***Signs of pyelonephritis:**[21C]
- ☐ kidney pain/tenderness in back under ribs
- ☐ new/different myalgia, flu like illness
- ☐ shaking chills (rigors) or temperature 37.9°C or above
- ☐ nausea/vomiting

Key: Suspected sepsis alert | UTI symptom | Action advised | Other advice

FLOWCHART 2 MEN AND WOMEN OVER 65 YEARS OR CATHETERISED ADULTS WITH SUSPECTED UTI

Urinary signs/symptoms, abnormal temperature, non-specific signs of infection[1B+,2B+,3D,4B-]

Yes

Do not perform urine dipsticks: Dipsticks become more unreliable with increasing age over 65 years. By 80 years half of older adults in care, and **most** with a urinary catheter, will have bacteria present in the bladder/urine without an infection. This "asymptomatic bacteriuria" is not harmful, and although it causes a positive urine dipstick, antibiotics are not beneficial and may cause harm [5B+,6A-,7B+,8C,9A+]

ALL

Consider Genitourinary Syndrome of Menopause (vulvovaginal atrophy), urethritis, sexually transmitted infections, and prostatitis[21D,25C]

THINK SEPSIS - check for signs/symptoms using local or national tool

Such as NICE, RCGP or NEWS2[10C,11A+,12C]

CHECK for signs/symptoms of pyelonephritis

- ☐ kidney pain/tenderness in back, under ribs[13A+,14C]
- ☐ new/different myalgia, flu-like illness[13A+,14C]
- ☐ nausea/vomiting[13A+,14C]
- ☐ shaking chills (rigors) [2B+,3D,4B-,14C]

OR temp over 37.9°C OR 36°C or below

rule out other cause

*see box below

Yes

Consider sepsis OR pyelonephritis

- send urine for culture before antibiotics are taken[9A+,17B-,18A+]
- immediately start antibiotic/management for upper UTI/sepsis using NICE/PHE guideline on pyelonephritis: antimicrobial prescribing or local/national guidelines for sepsis, considering resistance risk[18A+]
- if urinary catheter: consider removing or changing as soon as possible[15C,16C]
- refer if signs/symptoms of serious illness or condition[10C,11A+,12C,14C,18A+]

No

CHECK ALL FOR NEW signs/symptoms of UTI

- ☐ new onset dysuria alone[2B+,3D,19C]

OR 2 or more:

- ☐ temperature 1.5°C above patient's normal twice in the last 12 hours[2B+,4B-]
- ☐ new frequency or urgency[2B+,3D,19C]
- ☐ new incontinence[2B+,3D]
- ☐ new or worsening delirium/debility[2B+,3D,20A-]
- ☐ new suprapubic pain[2B+,3D,19C]
- ☐ visible haematuria[2B+,3D,19C]

If fever and delirium/debility only: consider other causes before treating for UTI (*see box below)[20A-]

If urinary catheter: also check for catheter blockage AND consider catheter removal or replacement[20A-,24A+]

Yes

UTI LIKELY: share self-care and safety-netting advice using TARGET UTI leaflet[22D,23B+]

- always send urine culture if feasible before antibiotics are taken, as greater resistance in older adults[9A+,17B-,24A+,26A+]
- if mild symptoms consider back-up antibiotics in women without catheters and low risk of complications[24A+,26A+,27B+]
- offer immediate antibiotics using NICE/PHE guideline on lower OR catheter-associated UTI: antimicrobial prescribing[24A+,26A+]
- if urinary catheter for over 7days consider changing (if possible remove) as soon as possible, but do not delay antibiotics[15C,16C,24A+]
- review antibiotic choice and culture result, use narrow-spectrum antibiotics if possible[24A+,26A+]

No

CHECK for other causes of delirium if relevant (PINCH ME)[20A-,28C]

- ☐ **P:** **P**ain
- ☐ **I:** other **I**nfection
- ☐ **N:** poor **N**utrition
- ☐ **C:** **C**onstipation
- ☐ **H:** poor **H**ydration
- ☐ **M:** other **M**edication
- ☐ **E:** **E**nvironment change

Yes

Consider other local/national resources for delirium management[29C]

Give safety-netting advice about consulting if:

- worsening symptoms[24A+,26A+]
- no improvement 48 hrs after starting antibiotics[24A+,26A+]
- signs of pyelonephritis[24A+,26A+]
- any symptom/sign of sepsis[24A+,26A+]

CHECK ALL for other localised symptoms/signs

*Two or more symptoms or signs of:

- ☐ respiratory tract infection
- ☐ gastrointestinal tract infection
- ☐ skin and soft tissue infection

Yes

Follow local diagnostic and treatment guidance

All

No

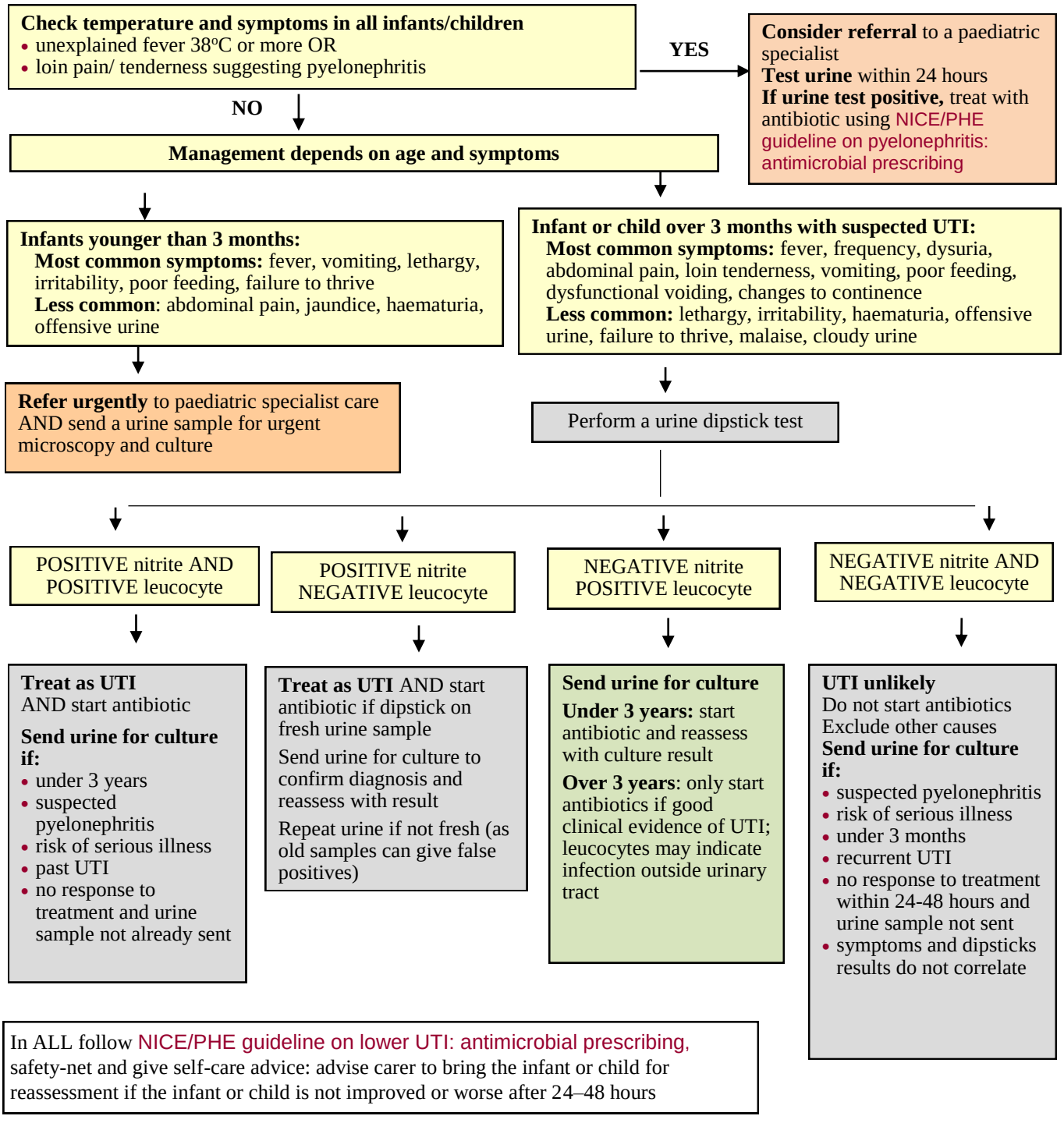
Advise "watchful waiting" with further investigation for other causes

All

If worsening signs or symptoms consider: admission or start/change antibiotic[10C,11A+,12C,14C,18A+]

Key:	Suspected sepsis alert	UTI symptom	Action advised	Other advice

FLOWCHART 3 CHILDREN UNDER 16 YEARS OF AGE WITH SUSPECTED UTI



In ALL follow NICE/PHE guideline on lower UTI: antimicrobial prescribing, safety-net and give self-care advice: advise carer to bring the infant or child for reassessment if the infant or child is not improved or worse after 24–48 hours

Refer to NICE CG54 for other things to consider in suspected UTI in children
For treatment refer to joint NICE/PHE guidance: NICE/PHE guidelines on UTI (lower): antimicrobial prescribing or NICE/PHE guidelines on pyelonephritis (acute): antimicrobial prescribing

Key:	Urgent alert	UTI signs/symptoms	Action advised	Other advice

LOWER URINARY TRACT INFECTION

(NG109 Overview | Urinary tract infection (lower): antimicrobial prescribing | Guidance | NICE)

Definition
A lower urinary tract infection (UTI) is an infection of the bladder usually caused by bacteria from the gastrointestinal tract entering the urethra and travelling up to the bladder.

Self-care
Give advice about managing symptoms with self-care to all people with lower UTI.
Advise people with lower UTI about using pain relief, if suitable ibuprofen is preferred.
Advise people with lower UTI about drinking enough fluids to avoid dehydration.
Be aware that no evidence was found on cranberry products or urine alkalinising agents to treat lower UTI.

Use of a back-up prescription
When a back-up antibiotic prescription is given, as well as the general advice on self-care, give advice about:

- Why an antibiotic may not be needed immediately
- Using the back-up prescription if symptoms do not start to improve within 48 hours or if they worsen at any time
- Possible adverse effects of antibiotics, particularly diarrhoea and nausea
- Safety netting-seeking medical help if antibiotics are taken and
    - symptoms worsen rapidly or significantly at any time
    - symptoms do not start to improve within 48 hours of taking the antibiotic
    - the person becomes systemically very unwell.

Use of an immediate antibiotic prescription
When an immediate antibiotic prescription is given, as well as the general advice on self-care, give advice about

- Possible adverse effects of the antibiotic, particularly diarrhoea and nausea
- Seeking medical help if symptoms worsen rapidly or significantly at any time, do not start to improve within 48 hours of taking the antibiotic, or the person becomes systemically very unwell.

If urine sent for culture and susceptibility, and antibiotic given: review antibiotic choice when results available, and change the antibiotic according to susceptibility results if bacteria are resistant and symptoms are not already improving, using a narrow-spectrum antibiotic wherever possible

Refer people aged 16 years and over with lower UTI to hospital if they have any symptoms or signs suggesting a more serious illness or condition (for example, sepsis).

Lower Urinary Tract Infection

Severity	Antibiotic Choice	Penicillin Allergy (see explanatory notes)
UNCOMPLICATED LOWER UTI **non-pregnant women (16 years and over)** **NB:** only use Nitrofurantoin is eGFR is 45ml/minute or greater only use Trimethoprim if low risk of resistance	**Non-pregnant women- Issue either a back-up antibiotic to use if no improvement in 48 hours or if symptoms worsen at any time) or an immediate antibiotic**	
	1st line **NITROFURANTOIN 100mg M/R TWICE A DAY OR 50mg FOUR TIMES A DAY orally** **or** **TRIMETHOPRIM 200mg TWICE A DAY (oral)** **2nd line** **PIVMECILLINAM 400mg as a single dose then 200mg THREE TIMES A DAY (oral)** **Treatment duration – 3 days**	**1st line** **NITROFURANTOIN 100mg M/R TWICE A DAY OR 50mg FOUR TIMES A DAY orally** **Or** **TRIMETHOPRIM 200mg TWICE A DAY orally** **Treatment duration – 3 days**
UNCOMPLICATED LOWER UTI **pregnant women** **NB:** only use Nitrofurantoin is eGFR is 45ml/minute or greater	**Pregnant women –issue immediate antibiotic**	
	1st line **NITROFURANTOIN 100mg m/r TWICE A DAY orally (avoid at term)** **2nd line** **AMOXICILLIN 500mg THREE TIMES A DAY (only if culture results available and susceptible)** **or** **CEFALEXIN 500mg TWICE A DAY orally** **Treatment duration -7 days**	**1st line** **NITROFURANTOIN 100mg m/r TWICE A DAY orally (avoid at term)** **Non severe allergy** **CEFALEXIN 500mg TWICE A DAY** **Treatment duration -7 days**
UNCOMPLICATED LOWER UTI **Men (16 years and over)**	**Men – issue immediate antibiotic**	
	1st Choice **TRIMETHOPRIM 200mg TWICE A DAY orally** **or** **NITROFURANTOIN 100mg M/R**	**1st choice** **TRIMETHOPRIM 200mg TWICE A DAY orally** **or** **NITROFURANTOIN 100mg M/R**

NB: only use Nitrofurantoin is eGFR is 45ml/minute or greater only use Trimethoprim if low risk of resistance	**TWICE A DAY OR 50mg FOUR TIMES A DAY orally** **Treatment duration -7 days** **2nd Choice: consider alternative diagnoses basing antibiotic choice on recent culture and susceptibility results**	**TWICE A DAY OR 50mg FOUR TIMES A DAY orally** **Treatment duration -7 days** **2nd Choice: consider alternative diagnoses basing antibiotic choice on recent culture and susceptibility results**
UNCOMPLICATED LOWER UTI **Children and young people (3 months and up to 16 years)** **NB:** only use Nitrofurantoin is eGFR is 45ml/minute or greater only use Trimethoprim if low risk of resistance	**Children – issue immediate antibiotic**	
	1st choice **TRIMETHOPRIM orally (if low risk of resistance** **3 months- 5 months** **4mg/kg (maximum 200mg per dose) ORALLY** **OR** **25mg TWICE A DAY ORALLY** **6 months – 5 years** **4mg/kg (maximum 200mg per dose) ORALLY** **OR** **50mg TWICE A DAY ORALLY** **6 years – 11 years** **4mg/kg (maximum 200mg per dose) ORALLY** **OR** **100mg TWICE A DAY ORALLY** **12 years – 15 years** **200mg TWICE A DAY ORALLY** **Duration 3 days** **Or** **NITROFURANTOIN orally** **3mths – 11 years** **750mcg/kg FOUR TIMES A DAY** **12 years to 15 years** **50mg FOUR TIMES A DAY ORALLY** **Or**	**1st choice** **TRIMETHOPRIM orally (if low risk of resistance** **3 months- 5 months** **4mg/kg (maximum 200mg per dose) ORALLY** **OR** **25mg TWICE A DAY ORALLY** **6 months – 5 years** **4mg/kg (maximum 200mg per dose) ORALLY** **OR** **50mg TWICE A DAY ORALLY** **6 years – 11 years** **4mg/kg (maximum 200mg per dose) ORALLY** **OR** **100mg TWICE A DAY ORALLY** **12 years – 15 years** **200mg TWICE A DAY ORALLY** **Duration 3 days** **Or** **NITROFURANTOIN orally** **3mths – 11 years** **750mcg/kg FOUR TIMES A DAY** **12 years to 15 years** **50mg FOUR TIMES A DAY ORALLY** **Or**

	100mg MR TWICE A DAY ORALLY **Duration 3 days** **2nd choice** **AMOXICILLIN** **(only if culture results available and susceptible)** **1 month to 11 months** **125 mg THREE times a day ORALLY** **1 to 4 years** **250 mg THREE times a day ORALLY** **5 to 15 years** **500 mg THREE times a day ORALLY** **Duration 3 days** **OR** **CEPHALEXIN** **3 months to 11 months** **12.5 mg/kg or 125 mg TWICE a day ORALLY** **1 year to 4 years** **12.5 mg/kg TWICE a day ORALLY** **or** **125 mg THREE times a day ORALLY** **5 years to 11 years** **12.5 mg/kg TWICE a day ORALLY** **or** **250 mg THREE times a day ORALLY**	**100mg MR TWICE A DAY ORALLY** **Duration 3 days**

	12 years to 15 years **500 mg TWICE a day ORALLY** **Duration: 3 days**	

NICE Antimicrobial prescribing summary for lower urinary tract infection: NG109 Visual summary (nice.org.uk)

ACUTE PYELONEPHRITIS

(NG 111 Overview | Pyelonephritis (acute): antimicrobial prescribing | Guidance | NICE)

Definition
Acute pyelonephritis is an infection of one or both kidneys usually caused by bacteria travelling up from the bladder.

Self-care
Advise people with acute pyelonephritis about using Ibuprofen or Paracetamol for pain, with the possible addition of a low-dose weak opioid such as Codeine for people over 12 years.
Advise people with acute pyelonephritis about drinking enough fluids to avoid dehydration.
Consider taking 2 sets of blood cultures if the patient is feverish and unwell.

Offer an immediate antibiotic to people with acute pyelonephritis. Take account of

- the severity of symptoms
- the risk of developing complications, which is higher in people with known or suspected structural or functional abnormality of the genitourinary tract or immunosuppression
- previous urine culture and susceptibility results
- previous antibiotic use, which may have led to resistant bacteria.

When results of urine cultures are available:

- review the choice of antibiotic and change the antibiotic according to susceptibility results if the bacteria are resistant, using a narrow spectrum antibiotic wherever possible.

When an antibiotic is given, as well as the general advice on self-care, give advice about

- possible adverse effects of the antibiotic, particularly diarrhoea and nausea
- nausea with vomiting also being a possible indication of worsening pyelonephritis
- seeking medical help if
  - symptoms worsen at any time
  - symptoms do not start to improve within 48 hours of taking the antibiotic
  - the person becomes systemically very unwell.

Reassess if symptoms worsen at any time, or do not start to improve within 48 hours of taking the antibiotic, taking account of:

- other possible diagnoses
- any symptoms or signs suggesting a more serious illness or condition, such as sepsis
- previous antibiotic use, which may have led to resistant bacteria

Acute Pyelonephritis

Severity	Antibiotic choice	Penicillin Allergy (see explanatory notes)
Non-pregnant women and men (16 years and over) **Mild** **NB:** only use Trimethoprim if low risk of resistance	**Mild** **CEFALEXIN 1g THREE TIMES A DAY orally** **Treatment duration –10 days** **OR** **TRIMETHOPRIM 200MG TWICE A DAY orally -only if culture results available and susceptible** **Treatment duration – 14 days**	**Severe Penicillin Allergy** **Mild** **TRIMETHOPRIM 200MG TWICE A DAY orally -only if culture results available and susceptible** **Treatment duration – 14 days**
Non-pregnant women and men (16 years and over) **Moderate** **remember safety issues if considering a fluoroquinolone	**CIPROFLOXACIN** (Fluoroquinolone antibiotic **) **500mg TWICE A DAY orally** **Treatment duration – 7 days**	**CIPROFLOXACIN** (Fluoroquinolone antibiotic **) **500mg TWICE A DAY (oral)** **Treatment duration – 7 days**
Non-pregnant women and men (16 years and over) **Severe** **remember safety issues if considering a fluoroquinolone	**CIPROFLOXACIN 400mg TWO OR THREE TIMES A DAY IV** (Fluoroquinolone antibiotic **) **OR** **CEFTRIAXONE 2g ONCE A DAY IV** **OR** **CO-AMOXICLAV 1.2g THREE TIMES A DAY IV (only in combination or if culture results available an susceptible)** **Typical duration: total of 7 days (after 48 hours review IVs and switch to oral if clinically appropriate)**	**CIPROFLOXACIN (IV) 400mg TWO OR THREE TIMES A DAY** (Fluoroquinolone antibiotic **) **OR** **GENTAMICIN (as per local policy) (IV) 5mg/kg ONCE A DAY – subsequent doses adjusted to serum gentamicin concentration** **Typical duration: total of 7 days (after 48 hours review IVs and switch to oral if clinically appropriate)**

IV to oral switch **remember safety issues if considering a fluoroquinolone	**According to sensitivities but usually** **CIPROFLOXACIN** (Fluoroquinolone antibiotic **) **500mg TWICE A DAY orally** **Or** **CO-AMOXICLAV 625mg orally THREE TIMES A DAY** **Treatment duration – 7- 10 days** **If TRIMETHOPRIM sensitive** **TRIMETHOPRIM 200mg orally TWICE A day for 14 days**	**According to sensitivities but usually** **CIPROFLOXACIN** (Fluoroquinolone antibiotic **) **500mg TWICE A DAY orally** **Treatment duration – 7 days** **Treatment duration – 7- 10 days** **If TRIMETHOPRIM sensitive** **TRIMETHOPRIM 200mg orally TWICE A day for 14 days**

For children's dosing refer to BNFc

NICE Antimicrobial prescribing summary for acute pyelonephritis: visual-summary-pdf-6544161037 (nice.org.uk)

ACUTE PROSTATITIS

(NICE guidance NG110 Prostatitis (acute): antimicrobial prescribing (nice.org.uk)

Definition

Acute prostatitis

- is a bacterial infection of the prostate needing treatment with antibiotics
- is usually caused by bacteria entering the prostate from the urinary tract
- can occur spontaneously or after medical procedures such as prostate biopsy
- can last several weeks
- can cause complications such as acute urinary retention and prostatic abscess

Self-care

Advise people with acute prostatitis about using paracetamol (with or without a low-dose weak opioid, such as codeine) for pain, or ibuprofen if this is preferred and suitable.

Advise people with acute prostatitis about drinking enough fluids to avoid dehydration.

Offer an immediate antibiotic to people with acute prostatitis. Take account of

- the severity of symptoms
- the risk of developing complications, having treatment failure, particularly after medical procedures such as prostate biopsy
- previous urine culture and susceptibility results
- previous antibiotic use, which may have led to resistant bacteria.

When results of urine cultures are available:

- review the choice of antibiotic and change the antibiotic according to susceptibility results if the bacteria are resistant, using a narrow spectrum antibiotic wherever possible.

When an antibiotic is given, as well as the general advice on self-care, give advice about

- the usual course of acute prostatitis (several weeks)
- possible adverse effects of the antibiotic, particularly diarrhoea and nausea
- seeking medical help if
  - symptoms worsen at any time
  - symptoms do not start to improve within 48 hours of taking the antibiotic
  - the person becomes systemically very unwell.

Reassess if symptoms worsen at any time, or do not start to improve within 48 hours of taking the antibiotic, taking account of:

- other possible diagnoses
- any symptoms or signs suggesting a more serious illness or condition, such as acute urinary retention, prostatic abscess or sepsis
- previous antibiotic use, which may have led to resistant bacteria

Refer people with acute prostatitis to hospital if

- they have any symptoms or signs suggesting a more serious illness or condition (for example sepsis, acute urinary retention or prostatic abscess)
- their symptoms are not improving 48 hours after starting the antibiotic.

Acute prostatitis

		Penicillin Allergy (see explanatory notes)
Minor **remember safety issues if considering a fluoroquinolone	**CIPROFLOXACIN 500mg TWICE A DAY orally** (antibiotic **)Fluoroquinolone **OR** **If unable to take quinolones TRIMETHOPRIM 200mg TWICE A DAY (oral)** **Treatment duration 14 days then review**	**CIPROFLOXACIN 500mg TWICE A DAY orally** (Fluoroquinolone antibiotic **) **OR** **If unable to take quinolones TRIMETHOPRIM 200mg TWICE A DAY (oral)** **Treatment duration 14 days then review**
Moderate	**CO-TRIMOXAZOLE 960mg TWICE A DAY orally** **Treatment duration 14 -28 days then review**	**CO-TRIMOXAZOLE 960mg TWICE A DAY orally** **Treatment duration 14 -28days then review**
Severe **Refer to/consult with urology** **remember safety issues if considering a fluoroquinolone	**CIPROFLOXACIN 400mg TWICE or THREE TIMES A DAY IV** (Fluoroquinolone antibiotic **) **Typical duration: total of 28 days (after 48 hours review IVs and switch to oral if clinically appropriate)**	**CIPROFLOXACIN 400mg TWICE or THREE TIMES A DAY IV** (Fluoroquinolone antibiotic **) **Typical duration: total of 28 days (after 48 hours review IVs and switch to oral if clinically appropriate)**
IV to oral switch **remember safety issues if considering a fluoroquinolone	**CIPROFLOXACIN 500mg TWICE A DAY orally** (antibiotic **)Fluoroquinolone **Typical duration: total of 28 days (after 48 hours review IVs and switch to oral if clinically appropriate)**	**CIPROFLOXACIN 500mg TWICE A DAY orally** (antibiotic **)Fluoroquinolone **Typical duration: total of 28 days (after 48 hours review IVs and switch to oral if clinically appropriate)**

NICE Antimicrobial prescribing summary for acute pyelonephritis:

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CATHETER ASSOCIATED URINARY TRACT INFECTION (CAUTI)

(NICE guidance NG113 Urinary tract infection (catheter-associated): antimicrobial prescribing (nice.org.uk)

Definition
A catheter-associated urinary tract infection (CAUTI) is a symptomatic infection of the bladder or kidneys in a person with a urinary catheter. It is defined as the presence of symptoms or signs compatible with a UTI in people with a catheter with no other identified source of infection plus significant levels of bacteria in a catheter or a midstream urine specimen when the catheter has been removed within the previous 48 hours.

- **DO NOT USE DIPSTICK TO DIAGNOSE CAUTI**
- Remove the catheter if one is no longer needed or, if this cannot be done, change it as soon as possible if it has been in place for more than 7 days. Seek advice for SupraPubic Catheters
- Give an immediate dose of antibiotic prior to removal of catheter (if removal of catheter is clinically appropriate)
- Obtain a urine sample before antibiotics are taken. Take the sample from the catheter, via a sampling port if provided, and use an aseptic technique
    - ✓ If the catheter has been changed, obtain the sample from the new catheter.
    - ✓ If the catheter has been removed, obtain a midstream specimen of urine
    - ✓ Send the urine sample for culture and susceptibility testing, noting a suspected catheter-associated infection and any antibiotic prescribed.

Self-care
Advise people with catheter associated UTI to consider taking paracetamol for pain
Advise people with catheter associated UTI to drink enough fluids to avoid dehydration.

Offer an antibiotic to people with catheter-associated UTI. Take account of

- the severity of symptoms
- the risk of developing complications, which is higher in people with known or suspected structural or functional abnormality of the genitourinary tract, or immunosuppression
- previous urine culture and susceptibility results
- previous antibiotic use, which may have led to resistant bacteria.

CHECK THE CATHETER PASSPORT FOR PATIENT SPECIFIC INFORMATION

When results of urine cultures are available:

- review the choice of antibiotic and change the antibiotic according to susceptibility results if the bacteria are resistant, using a narrow spectrum antibiotic wherever possible.

When an antibiotic is given, as well as the general advice on self-care, give advice about

- possible adverse effects of antibiotics, particularly diarrhoea and nausea
- seeking medical help if
    - ➢ symptoms worsen at any time
    - ➢ symptoms do not start to improve within 48 hours of taking the antibiotic
    - ➢ the person becomes systemically very unwell.

Reassess people with catheter-associated UTI if symptoms worsen at any time, or do not start to improve within 48 hours of taking the antibiotic, taking account of

- other possible diagnoses
- any symptoms or signs suggesting a more serious illness or condition, such as sepsis
- previous antibiotic use, which may have led to resistant bacteria.

Refer people with catheter-associated UTI to hospital if they have any symptoms or signs suggesting a more serious illness or condition (for example, sepsis)

Consider referring or seeking specialist advice for people with catheter associated UTI if they

- are significantly dehydrated or unable to take oral fluids and medicines
- are pregnant
- have a higher risk of developing complications (for example, people with known or suspected structural or functional abnormality of the genitourinary tract, or underlying disease [such as diabetes or immunosuppression])
- have recurrent catheter-associated UTIs
- have bacteria that are resistant to oral antibiotics.

CATHETER ASSOCIATED URINARY TRACT INFECTION (CAUTI)

Non-Pregnant women and men aged 16 years and over

NO UPPER UTI SYMPTOMS

Remove or change the catheter (see advice for SPCs).
Treat according to sensitivities
If no sensitivities treat as per table below

		Penicillin Allergy (see explanatory notes)
Minor (no upper UTI symptoms)	**1st line NITROFURANTOIN 100mg M/R TWICE A DAY OR 50mg FOUR TIMES A DAY orally** **or** **TRIMETHOPRIM 200mg TWICE A DAY orally** **Or** **AMOXICILLIN (only if culture results available and susceptible) 500mg THREE TIMES A DAY orally** **Treatment duration – 7 days**	**1st line NITROFURANTOIN 100mg M/R TWICE A DAY OR 50mg FOUR TIMES A DAY orally** **or** **TRIMETHOPRIM 200mg TWICE A DAY orally** **Treatment duration – 7 days**
Moderate	**PIVMICILLIN 400mg THREE TIMES A DAY orally** **Treatment duration – 7 days**	**Discuss with consultant microbiologist**
Severe **Refer to/consult with urology** **remember safety issues if considering a fluoroquinolone	**CIPROFLOXACIN 400mg TWO OR THREE TIMES A DAY IV** (Fluoroquinolone antibiotic **) **OR** **CEFTRIAXONE 2g ONCE A DAY IV** **OR**	**CIPROFLOXACIN (IV) 400mg TWO OR THREE TIMES A DAY** (Fluoroquinolone antibiotic **) **OR** **GENTAMICIN (as per local policy) (IV) 5mg/kg ONCE A DAY –**

	CO-AMOXICLAV 1.2g THREE TIMES A DAY IV (only in combination or if culture results available an susceptible) **Typical duration: total of 7 days (after 48 hours review IVs and switch to oral if clinically appropriate)**	**subsequent doses adjusted to serum gentamicin concentration** **Typical duration: total of 7 days (after 48 hours review IVs and switch to oral if clinically appropriate)**
IV to oral switch **remember safety issues if considering a fluoroquinolone	**According to sensitivities but usually** **CIPROFLOXACIN** (Fluoroquinolone antibiotic **) **500mg TWICE A DAY orally** **Or** **CO-AMOXICLAV 625mg orally THREE TIMES A DAY** **Treatment duration – 7- 10 days** **If TRIMETHOPRIM sensitive** **TRIMETHOPRIM 200mg orally TWICE A day for 14 days**	**According to sensitivities but usually** **CIPROFLOXACIN** (Fluoroquinolone antibiotic **) **500mg TWICE A DAY orally** **Treatment duration – 7 days** **Treatment duration – 7- 10 days** **If TRIMETHOPRIM sensitive** **TRIMETHOPRIM 200mg orally TWICE A day for 14 days**

NICE Antimicrobial prescribing summary for CAUTI

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Catheter associated urinary tract infection (CAUTI)
Non-Pregnant women ans men aged 16 years and over

UPPER UTI SYMPTOMS

		Penicillin Allergy (see explanatory notes)
Minor (upper UTI symptoms) **remember safety issues if considering a fluoroquinolone	**1st line** **CEFALEXIN 1g THREE TIMES A DAY orally** **Treatment duration – 10 days** **or** **TRIMETHOPRIM (only if culture results available and susceptible) 200mg TWICE A DAY orally** **Treatment duration – 7 days** **Or** **CIPROFLOXACIN 500mg TWICE A DAY orally** (Fluoroquinolone antibiotic **) **Treatment duration – 7 days**	**1st line** **TRIMETHOPRIM 200mg TWICE A DAY orally** **Treatment duration – 7 days** **or** **CIPROFLOXACIN 500mg TWICE A DAY orally** (Fluoroquinolone antibiotic **) **Treatment duration – 7 days**
Moderate/severe	**CIPROFLOXACIN (IV)** (Fluoroquinolone antibiotic **) **400mg TWO OR THREE TIMES A DAY** **or** **CEFTRIAXONE (IV) 2g ONCE A DAY** **or** **CO-AMOXICLAV (IV) 1.2g THREE TIMES A DAY (only in combination or if culture results available an susceptible)** **or** **GENTAMICIN (as per local policy) (IV) 5mg/kg ONCE A DAY – subsequent doses adjusted to serum gentamicin concentration** **Typical duration: total of 7 -10 days (after 48 hours review IVs and switch to oral if clinically appropriate)**	**CIPROFLOXACIN (IV)** (Fluoroquinolone antibiotic **) **400mg TWO OR THREE TIMES A DAY** **or** **GENTAMICIN (as per local policy) (IV) 5mg/kg ONCE A DAY – subsequent doses adjusted to serum** **Typical duration: total of 7-10 days (after 48 hours review IVs and switch to oral if clinically appropriate)**

IV to oral switch **remember safety issues if considering a fluoroquinolone	**According to sensitivities but usually** **CIPROFLOXACIN** (Fluoroquinolone antibiotic **) **500mg TWICE A DAY orally** **Or** **CO-AMOXICLAV 625mg orally THREE TIMES A DAY** **Treatment duration – 7- 10 days** **If TRIMETHOPRIM sensitive** **TRIMETHOPRIM 200mg orally TWICE A day for 14 days**	**According to sensitivities but usually** **CIPROFLOXACIN** (Fluoroquinolone antibiotic **) **500mg TWICE A DAY orally** **Treatment duration – 7 days** **Treatment duration – 7- 10 days** **If TRIMETHOPRIM sensitive** **TRIMETHOPRIM 200mg orally TWICE A day for 14 days**

NICE Antimicrobial prescribing summary for CAUTI

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