Southwark and Lambeth Antibiotic Guideline for Primary Care 2019

Approved by the Southwark Medicines Management Committee and Lambeth Borough Prescribing Committee: October 2019. Review date: October 2021 (or sooner if evidence changes)

These guidelines have been developed by NHS Southwark CCG, NHS Lambeth CCG, Department of Microbiology and Pharmacy Departments at King's College Hospital NHS Foundation Trust (KCH) and Guy's and St Thomas' NHS Foundation Trust (GSTFT), Southwark and Lambeth Public Health. The guideline is based on the Public Health England Management of infection guidance for primary care, Updated September 2019

Please direct any comments or queries to Medicines Optimisation: NHS Southwark CCG (email: SOUCCG.Medicines-Optimisation@nhs.net, tel: 020 7525 3253), NHS Lambeth CCG (email: LAMCCG.medicinesoptimisation@nhs.net, tel: 020 3049 4197)

Aims

- To provide a simple, empirical approach to the treatment of common infections based on our local community and sensitivity patterns.
- To promote the safe, cost-effective and appropriate use of antimicrobials by targeting those who may benefit most.
- To minimise the emergence of antimicrobial resistance in the community.

Principles of Treatment

1. This guidance is based on the best available evidence at the time of development. Its application must be modified by professional judgement, based on knowledge about individual patient co-morbidities, potential for drug interactions and involve patients in management decisions.
2. It is important to initiate antibiotic as soon as possible in severe infection or in those immunocompromised, particularly if sepsis is suspected. Refer to the NICE guideline [NG51] Sepsis: recognition, diagnosis and early management for further information.
3. This guidance should not be used in isolation; it should be supported with patient information about safety netting, back-up/delayed antibiotics, self –care, infection severity and usual duration, clinical staff education, and audits. The RCGP TARGET antibiotics toolkit is available via the RCGP website.
4. The majority of this guidance provides dose and duration of treatment for **ADULTS**. Doses may need modification for age, weight and renal function. Refer to the BNF for Children for information on paediatric doses.
5. Refer to BNF for further dosing and interaction information (e.g. interaction between macrolides and statins), ALWAYS check for hypersensitivity/allergy.
6. Have a lower threshold for antibiotics in immunocompromised or in those with multiple co- morbidities; send samples for culture and seek advice.
7. **Drugs in RED are contra-indicated in true penicillin allergy. Drugs in GREEN are considered safe in penicillin allergy**.
8. Prescribe an antimicrobial only when there is likely to be a clear clinical benefit, giving alternative, non-antibiotic self –care advice where appropriate.
9. Consider a no, or delayed, antibiotic strategy for acute self-limiting upper respiratory tract infections (e.g. acute sore throat, acute cough and acute sinusitis) and mild UTI symptoms
10. 'Blind' antibiotic prescribing for unexplained pyrexia usually leads to further difficulty in establishing the diagnosis.
11. Limit prescribing over the telephone/eConsult to exceptional cases.
12. Avoid broad spectrum antibiotics (e.g. co-amoxiclav, quinolones and cephalosporins) when narrow spectrum antibiotics remain effective, as they increase the risk of all infections, including *Clostridium difficile*, MRSA and resistant Urinary Tract Infections (UTIs).
13. Avoid widespread use of topical antibiotics (especially those agents also available as systemic preparations, in most cases, topical use should be limited).
14. If diarrhoea or vomiting occurs due to an antibiotic or the illness being treated, the efficacy of hormonal contraception may be impaired and additional precautions should be recommended.
15. Clarithromycin is now recommended over erythromycin, except in pregnancy and breastfeeding. It has fewer side-effects and twice daily rather than four times daily dosing promotes compliance. **Statins should be withheld when macrolide antibiotics are prescribed.**
16. In pregnancy, take specimens to inform treatment. Penicillins, cephalosporins and erythromycin are not associated with increased risk of spontaneous abortion. If possible, avoid tetracyclines, quinolones, aminoglycosides, azithromycin (except in chlamydial infection), clarithromycin and high dose metronidazole (2g stat) unless the benefits outweigh the risks. Short-term use of nitrofurantoin is not expected to cause foetal problems (theoretical risk of neonatal haemolysis). Trimethoprim is also unlikely to cause problems unless poor dietary folate intake, or taking another folate antagonist. **If you are unsure about a particular drug's use in pregnancy contact the relevant Medicines Optimisation team for further advice.**
17. Annual vaccination is essential for all those at clinical risk of severe influenza. Visit Annual Flu Programme for further information. For information on Immunisation against infectious disease refer to The Green Book.
18. For information on causative pathogens, refer to PHE guidance: Management of infection guidance for primary care for consultation and local adaptation

Self Care

Promote self-care where appropriate. Refer to the Self Care sections highlighted throughout the guideline. Treatments that are often available to purchase over the counter include:

- Analgesics (painkillers) for short-term use
- Topical antifungal treatment for short-term minor ailments
- Cold sore treatment
- Colic treatment
- Cough and cold remedies
- Eye treatments/lubricating products
- Head lice treatment and scabies treatment
- Threadworm tablets
- Topical acne treatment
- Warts and verruca treatment

For further information see:

- NHS Lambeth CCG: 'Self care with over the counter products' leaflet
- NHS Southwark CCG: 'Are you Self Care Aware?' leaflet
- Self-care Forum website
- NHS Choices website

Patients who are registered with a Southwark GP and entitled to free prescriptions may be eligible to receive treatment free of charge for certain conditions under the Pharmacy First Scheme. For further information see the Pharmacy First webpage.

CONTENTS PAGE

Infection	Comments	First Choice Antibiotics		Pregnancy and Breastfeeding	
		No allergy	Penicillin allergy	No allergy	Penicillin allergy
UPPER RESPIRATORY TRACT INFECTIONS					
Acute sore throat PHE CKS NICE FeverPAIN Treating your infection patient leaflet	**AVOID ANTIBIOTICS or consider back-up/ delayed antibiotic prescription.** 82% of cases resolve in 7 days without antibiotics and pain is only reduced by 16 hours. Use **FeverPAIN*** Score to assess. Criteria include: **F**ever in last 24h, **P**urulence, **A**ttend rapidly under 3 days, severely **I**nflamed tonsils, **N**o cough or coryza). **Score 0-1**: 13-18% streptococci isolation - use NO antibiotic strategy **Score 2-3:** 34-40% streptococci isolation - consider no antibiotic or a back-up antibiotic prescription; **Score 4-5:** 62-65% streptococci isolation. Use clinical judgement to assess severity on baseline symptoms (difficulty swallowing, runny nose, cough, headache, muscle ache, interference with normal activities) and use immediate antibiotic or 48 hour short delayed antibiotic prescription. Always share self-care advice & safety net. Complications are rare. If systemically unwell, refer to emergency department. *Centor criteria can also be used	First Line: Fever Pain 0-1: self-care see NHS Choices Second Line: Fever pain 2-3: delayed prescription of phenoxymethylpenicillin Phenoxymethylpenicillin (oral) 500 mg QDS OR 1g BD (if mild) for 5-10 days If severe (refer to comments): 500mg QDS for 10 days	First Line: Fever Pain 0-1: self-care see NHS Choices Second Line: Fever pain 2-3: delayed prescription of clarithromycin Clarithromycin (oral) 250 mg BD for 5 days If severe (refer to comments): 500mg BD for 5 days	First Line: Fever Pain 0-1: self-care see NHS Choices Second Line: Fever pain 2-3: delayed prescription of Phenoxymethylpenicillin Phenoxymethylpenicillin (oral) 500 mg QDS OR 1g BD (if mild) for 5-10 days If severe (refer to comments): 500mg QDS for 10 days	First Line: Fever Pain 0-1: self-care see NHS Choices Second Line: Fever pain 2-3: delayed prescription of erythromycin Erythromycin (oral) 250 mg – 500 mg QDS for 5 days.
Scarlet Fever PHE Scarlet Fever	**Prompt treatment** with appropriate antibiotics significantly reduces the risk of complications. Vulnerable individuals (immunocompromised, the co-morbid, or those with skin disease) are at increased risk of developing complications **This is a notifiable disease**	First line: Phenoxymethylpenicillin (oral) 500 mg QDS for 10 days	First line: Clarithromycin (oral) 250 mg-500mg BD for 5 days	First Line: Phenoxymethylpenicillin (oral) 500 mg QDS for 10 days	First Line: Erythromycin (oral) 250 mg – 500 mg QDS or 500mg – 100mg BD for 5 days.
Influenza PHE	See the PHE Influenza guidance for further information.				

<table>
<tr><td rowspan="2">Acute Rhino-sinusitis

NICE

CKS

Treating your infection patient leaflet</td><td rowspan="2">Symptoms <10 days: do not offer antibiotics as most resolve in 14 days without. Antibiotics only offer marginal benefit after 7 days.
Symptoms >10 days: no antibiotic, or back-up/delayed antibiotic if several episodes of: purulent nasal discharge; severe localised unilateral pain; fever; marked deterioration after initial milder phase.
Systemically very unwell or more serious signs and symptoms: immediate antibiotic.
Suspected complications: e.g. sepsis, intraorbital or intracranial infection, refers to secondary care.
Self-care: paracetamol/ibuprofen for pain/fever. Consider high-dose nasal steroid if >12 years. Little evidence that nasal saline or nasal decongestants help, but people may want to try them (suitable for self-care) Consider prescribing a high-dose nasal corticosteroid for 14 days for adults and children aged 12 years and over with symptoms for 10 days or more, but being aware that nasal corticosteroids:
• may improve symptoms but are not likely to affect how long they last
• could cause systemic effects, particularly in people already taking another corticosteroid
• may be difficult for people to use correctly -consider providing patient information leaflet on usage

For detailed information click on the visual summary contained within the NICE hyperlink</td><td colspan="4">First Line: self-care see NHS Choices</td></tr>
<tr><td>Second Line: (delayed antibiotic)
phenoxymethylpenicillin (oral) 500mg QDS for 5 days

Offer as first choice if systemically very unwell or high risk of complications; Co-amoxiclav 625mg TDS for 5 days

Mometasone nasal spray 200mcg BD for 14 days (with or without an oral antibiotic)</td><td>Second Line: (delayed antibiotic)
Doxycycline (oral) 200mg STAT then 100mg OD for a total of 5 days
OR
Clarithromycin (oral) 500mg BD for 5 days

Mometasone nasal spray 200mcg BD for 14 days

For 2nd line choice of antibiotic or worsening contact local medical infection team (refer to page 21 for contact details).</td><td>Second Line: (delayed antibiotic)
Phenoxymethylpenicillin (oral) 500mg QDS for 5 days

For 2nd line choice of antibiotic or if worsening contact local medical infection team (refer to page 21 for contact details).
Mometasone nasal spray 200mcg BD for 14 days if benefit outweighs risk</td><td>Second Line: (delayed antibiotic)
Erythromycin (oral) 250 mg – 500 mg QDS for 5 days

For 2nd line choice of antibiotic or if worsening contact local medical infection team (refer to page 21 for contact details).
Mometasone nasal spray 200mcg BD for 14 days if benefit outweighs risk.</td></tr>
<tr><td rowspan="2">Acute otitis media (AOM)

CKS

NICE

NICE: Fever in Under 5s

Treating your infection patient leaflet

NHS Choices</td><td rowspan="2">Consider no or back up/delayed antibiotics

Regular paracetamol or ibuprofen for pain (ensure correct dose for age or weight at the right time and maximum doses for severe pain) AOM resolves in 60% of cases in 24hrs without antibiotics, which only reduce pain at 2 days and does not prevent deafness.
Otorrhoea or under 2 years with infection in both ears: no, back-up or immediate antibiotic.
Otherwise: no or back-up antibiotic.
Systemically very unwell or high risk of complications: immediate antibiotic

If systemically unwell, refer to emergency department.</td><td colspan="4">First-line: self-care analgesia for pain relief</td></tr>
<tr><td>Amoxicillin (oral) for 5 days

500mg TDS

Second Line:
(if symptoms worsen on first choice antibiotic taken for at least 2-3 days): Co-amoxiclav 625mg TDS for 5 days</td><td>Clarithromycin (oral) for 5 days

250 mg BD, increased if necessary in severe infections to 500 mg BD</td><td>Amoxicillin (oral)
500 mg
TDS for 5 days</td><td>Erythromycin (oral)
250 mg – 500 mg QDS for 5 days</td></tr>
</table>

Acute Otitis Externa (OE) CKS	If cellulitis/disease extending outside ear canal, take a swab for culture, start oral flucloxacillin & refer to exclude malignant OE. Malignant OE can be caused by *Pseudomonas aeruginosa* and therefore may not respond to flucloxacillin. If patient presents with symptoms of longer than 2 weeks, in particular patients with diabetes, refer to exclude malignant OE.	First-line: self-care analgesia for pain relief and advice to apply localised heat (e.g. a warm flannel).	
		Second Line: Topical acetic acid 2% spray: 1 spray TDS for 7 days (Available OTC as EarCalm®) **OR** neomycin sulphate with corticosteroid ear drops: 3 drops TDS for 7 days minimum to 14 days maximum. Cure rates similar at 7 days for topical acetic acid or antibiotic +/- steroid. If cellulitis: flucloxacillin (oral) 250mg QDS for 7 days If severe: 500mg QDS for 7 days	

Infection	Comments	First Choice Antibiotics		Pregnancy and Breastfeeding	
		No allergy	Penicillin allergy	No allergy	Penicillin allergy
LOWER RESPIRATORY TRACT INFECTIONS					
Community Acquired Pneumonia (treatment in the community) BTS NICE: Pneumonia in Adults	Use **CRB65** score in conjunction with clinical judgement to help guide and review: Each parameter scores 1: **C**onfusion (AMT≤8); **R**espiratory rate >30/min; **BP** systolic <90mmHg or diastolic ≤ 60mmHg, Age ≥**65**. **Score 3-4:** urgent hospital admission **Score 1-2:** intermediate risk consider hospital assessment **Score 0**: low risk consider home based care **Provide safety net advice and likely duration of symptoms: fever for 1 week, sputum production for up to 4 weeks, cough up to 6 weeks, most symptoms resolve with 3 months and may take up to 6 months to get back to normal.** Atypical mycoplasma infection is rare in > 65 years. Failure to improve or worsening within 48 hours, consider hospital treatment or chest X-ray. 'When **life threatening infection**, GP should administer antibiotics. Benzylpenicillin 1.2 gram IV or amoxicillin 1 gram orally are preferred agents[5].	**Refer to hospital if CRB65≥3**		**Refer to hospital if CRB65 ≥ 1**	
		If **CRB65=1,2 & AT HOME**, clinically assess need for antibiotic cover for atypicals: Amoxicillin (oral) 500 mg TDS **AND** Clarithromycin (oral) 500 mg BD for 7 days depending on severity **OR** Doxycycline **alone** (oral) 200 mg STAT on day 1 then 100 mg OD for a total of 7 days If **CRB65=0:** Amoxicillin (oral) 500 mg TDS for 5 days with safety netting advice; to return for review ~~at~~ within 3 days; continue for a total of 7 days if no improvement or worsening.	If **CRB65=1, 2** and at home: Clarithromycin(oral) 500 mg BD for 7-days depending on severity **OR** Doxycycline(oral) 200 mg STAT on day 1 then 100 mg OD for a total of 7-days If **CRB65=0:** Clarithromycin (oral) 500mg BD 5 days with safety netting advice; to return for review within 3 days; continue for a total of 7 days if no improvement or worsening. **OR** Doxycycline (oral)200mg STAT on day 1, then 100mg OD for 4 days; review at 3 days; total 7 days if poor response	If **CRB65=0:** Amoxicillin(oral) 500 mg TDS for 7 days To return for review at 3 days; if not improving or worsening refer to hospital	If **CRB65=0:** Erythromycin (oral) 250 mg – 500 mg QDS for 7 days. To return for review at 3 days; if not improving or worsening refer to hospital

Infection	Comments	First Choice Antibiotics		Pregnancy and Breastfeeding	
		No allergy	Penicillin allergy	No allergy	Penicillin allergy
Acute cough, bronchitis CKS-cough CKS-Bronchitis NICE: RTI Treating your infection patient leaflet	**Consider no or 7 day back up/delayed antibiotic with self-care and safety netting and advise that symptoms can last 3 weeks.** Antibiotics are of little benefit if no co-morbidity. Symptom resolution can take up to 3 weeks. Consider immediate antibiotics if >80years of age and **ONE** of: hospitalisation in past year; taking oral steroids; insulin dependent diabetic; congestive heart failure, serious neurological disorder/stroke **OR** >65 years with **TWO** of the above. Consider CRP testing if antibiotic treatment is being considered. No antibiotics if CRP<20mg/L and symptoms for >24 hours; delayed antibiotics if CRP 20-100mg mg/L; immediate antibiotics if >100mg/L.	**First line: Self Care and safety netting advice, see** NHS Choices			
		Second line: Doxycycline (adults and children over 12 years) (oral)200 mg STAT, then 100 mg OD (total 5 days treatment) Third line: Amoxicillin(oral) 500 mg TDS for 5 days	Second line: Doxycycline (adults and children over 12 years) (oral)200 mg STAT, then 100 mg OD (total 5 days treatment) **OR** Clarithromycin (in children < 12 years old) 250mg-500mg BD for 5 days	Second line: Amoxicillin(oral) 500 mg TDS for 5 days	Second line: Erythromycin(oral) 250 mg – 500 mg QDS for 5 days
Acute exacerbation of COPD NICE: COPD in over 16s GOLD COPD	Treat exacerbations promptly with antibiotics if purulent sputum **and** increased shortness of breath **and/or** increased sputum volume. Consider risk factors for antibiotic resistance: severe COPD (MRC>3), co-morbidity, frequent exacerbations, antibiotics in the last 3 months Previous microbiology should be reviewed if at risk of resistance.[14] Antibiotics should be used to treat exacerbations of COPD associated with a history of more purulent sputum. Patients with exacerbations without more purulent sputum do not need antibiotic therapy unless there is consolidation on a chest radiograph or clinical signs of pneumonia[7] - in which case follow treatment guidance for pneumonia. Oral corticosteroids should be considered in patients with a significant increase in breathlessness which interferes with daily activities[7].	**Rescue Pack (for initial management of exacerbation)** Prescribe prednisolone 5mg tablets - Take SIX tablets in the morning for 5 days and Doxycycline 100mg capsules **(unless allergic/pregnant/breastfeeding – see below for antibiotic choice)** - Take TWO capsules on the first day, then 100mg daily for a further 4 days, if no improvement in symptoms or doxycycline allergy refer to Visual Summary for choice of antibiotics and prescribing considerations **If a patient is using two or more packs in a year they need a specialist review. Consider referral to the Integrated Respiratory Team who can be contacted 7 days a week 9am-5pm on 07796 178719 (St Thomas') or 0203 299 6531 (Kings). Single Point of Referral can be accessed via lamccg.respiratory@nhs.net (Lambeth) Souccg.respiratory@nhs.net (Southwark)** For access to the South East London integrated guideline for the management of COPD, click here: South East London integrated guideline for the management of COPD			
		Doxycycline(oral) 200 mg OD for 1 day then 100mg for a further 4 days **If at risk of resistance:** Co-amoxiclav (oral) 625mg TDS for 5days	Doxycycline (oral) 200 mg OD for 1 day then 100mg for a further 4 days **OR** Clarithromycin (oral) 500 mg BD for 5 days **If risk factors present, contact microbiology for advice on antibiotic choice in recurrent/resistant cases**	Amoxicillin (oral) 500 mg TDS for 5 days **If risk factors present, contact microbiology**	Erythromycin(oral) 250 mg – 500 mg QDS for 7 days **If risk factors present, contact microbiology**

Infection	Comments	First Choice Antibiotics		Pregnancy and Breastfeeding	
		No allergy	Penicillin allergy	No allergy	Penicillin allergy
URINARY TRACT INFECTIONS					
Lower UTI in adults (no fever or flank pain) PHE UTI quick reference guide SIGN CKS women CKS men TARGET Antibiotic Toolkit SAPG UTI	**Women** treat **empirically** if ≥ 2 symptoms a) Send urine culture if risk of antibiotic resistance. If not pregnant and mild symptoms, watch & wait with back-up antibiotic OR consider immediate antibiotic b) Advise paracetamol or ibuprofen for pain **Men**: Consider prostatitis and send pre-treatment Mid-stream urine (MSU OR if symptoms mild/non-specific, use negative dipstick to exclude UTI. **Always provide safety net advice.** **In treatment failure:** always perform culture **Low risk of resistance: younger women with acute UTI and no risk.** **Risk factors for increased resistance include:** care home resident, recurrent UTI, hospitalisation anywhere >7days within the last 12 months unresolving urinary symptoms, recent travel to a country with increased antimicrobial resistance (outside Northern Europe and Australasia), previous known UTI resistant to trimethoprim, cephalosporins or quinolones (consider safety issues) If increased resistance risk send culture for susceptibility testing & give safety net advice. **>65 years:** treat if fever ≥38°C, or 1.5°C above base twice in 12 hours, and >1 other symptom **People > 65 years: do not treat asymptomatic bacteriuria;** it is common but is not associated with increased morbidity	**First line for women and men**: Nitrofurantoin (oral) 100mg MR twice daily if eGFR over 45ml/min. Use nitrofurantoin 1st line as resistance and community multi-resistant Extended-spectrum Beta-lactamase *E. coli* are increasing. Nitrofurantoin is contraindicated if eGFR < 45 mL/min or if known G6PD deficiency or in acute porphyria. **Alternative 1st line agents for women and men:** Trimethoprim (oral) 200 mg BD (local resistance is high, therefore only recommend if patient has low risk factors for resistance or if sensitivity of this is known). **OR** **For non-pregnant women >16y** Pivmecillinam (oral) 400mg STAT then 200mg TDS If eGFR<45ml/min or elderly consider pivmecillinam or fosfomycin (3g stat in women). **NOTE:** Fosfomycin should **only** be prescribed on the advice of a microbiologist following culture sensitivity results for the treatment of complicated ESBL producing UTI **For men >16y: Second-choice**: *If no improvement in UTI symptoms on first-choice taken for at least 48 hours or when first-choice not suitable, consider alternative diagnoses and follow recommendations in the NICE guidelines on pyelonephritis (acute): antimicrobial prescribing or prostatitis (acute): antimicrobial prescribing, basing antibiotic choice on recent culture and susceptibility results.*		Prompt treatment for **seven** days to prevent progression to pyelonephritis. Send MSU for culture and review antibiotics already prescribed based on results. Short-term use of nitrofurantoin in pregnancy is unlikely to cause problems to the foetus. **Do not prescribe trimethoprim for pregnant women with established folate deficiency, or low dietary folate intake, or those taking folate antagonists (e.g. antiepileptics or proguanil)**	

Infection	Comments	First Choice Antibiotics		Pregnancy and Breastfeeding	
		No allergy	Penicillin allergy	No allergy	Penicillin allergy
		Treatment duration: Women: 3 days **Men: 7 days**. Referral to hospital may be indicated in non-responding, severe or recurrent infection or suspicion of underlying UT abnormality		**Treat for 7 days:** 1st line: Nitrofurantoin (oral) 100mg m/r BD, unless at term 2nd line: Cefalexin (oral) 500 mg BD Risk of C.*difficile*	**Treat for 7 days:** Nitrofurantoin (oral) 100mg m/r BD **OR** 2nd line: Contact local medical infection team (refer to contact details on page 21)
Recurrent UTI in women (2 in 6 months or ≥ 3 proven UTIs/year) PHE UTI diagnosis guide for primary care TARGET UTI	Consider STI screen and Urology referral where necessary.	First line: Advise simple measures, including hydration & ibuprofen for symptom relief. Cranberry products, which can be purchased from pharmacies and health food stores, work for some women, but good evidence is lacking. For postmenopausal women, if no improvement, consider vaginal oestrogen (review with 12 months). Second line: **Standby:** for those with recurrent UTIs consider a course at home to start as soon as symptoms occur. Base choice on past sensitivity. OR**Post-coital** (off label) take STAT Third line: Prophylaxis once daily at night and review at 3 months. First line choice (if eGFR≥45ml/min): Nitrofurantoin M/R 100mg Second line choice: Ciprofloxacin (oral) 500mg If recent culture sensitive: Trimethoprim (oral) 100mg		Contact local medical infection team (refer to contact details on page 21) for advice on treating recurrent UTIs in pregnant, breastfeeding women and women trying to conceive.	

Infection	Comments	First Choice Antibiotics		Pregnancy and Breastfeeding	
		No allergy	Penicillin allergy	No allergy	Penicillin allergy
Recurrent UTI in men	**Refer to hospital**				
Lower UTI in children PHE UTI CKS NICE: UTI in under 16s	**Urgently refer children < 3 months old for assessment** If ≥ 3 months old: • If nitrate positive and fresh sample, start antibiotics and send for microscopy, culture and sensitivity (MC+S). • If leucocyte only positive, may be indicative of infection outside urinary tract, send MSU for MC+S, initiate antibiotics if there is good clinical evidence of UTI. • If nitrate and leucocyte negative, consider another cause for illness. **Imaging:** only refer if child <6 months, or recurrent or atypical UTI	**See BNF-C for doses** First Line: Trimethoprim (oral) **OR** if eGFR≥45ml/min Nitrofurantoin (oral) If susceptible, amoxicillin (oral) Second line: Cefalexin(oral) **3 days treatment**		**See BNF-C for doses** Trimethoprim(oral) **OR** Nitrofurantoin(oral) For 2nd line choice of antibiotic contact local trust medical infection team (see contact details on page 20). **3 days treatment**	
Upper UTI in children PHE UTI CKS NICE: UTI in under 16s	**Refer to paediatrics to obtain a urine sample for culture; assess signs of systemic infection , consider systemic antimicrobials**				
Catheter associated UTI	**Antibiotic treatment is not routinely needed for asymptomatic bacteriuria in people with a urinary catheter.** Consider removing or, if not possible, changing the catheter if it has been in place for more than 7 days. But do not delay antibiotic treatment. Advise paracetamol for pain. Advise drinking enough fluids to avoid dehydration. Offer an antibiotic for a symptomatic infection. When prescribing antibiotics, take account of severity of symptoms, risk of complications, previous urine culture and susceptibility results, previous antibiotic use which may have led to resistant bacteria and local antimicrobial resistance data. Do not routinely offer antibiotic prophylaxis to people with a short-term or long-term catheter. KCH and GSTFT (Including community services) launched "My Catheter Passport" to improve the care for people with catheters. You can view My Catheter Passport here	**If no upper UTI symptoms** First line: Nitrofurantoin (if eGFR≥45ml/min) 100mg M/R 100mg BD **OR** Trimethoprim (if low risk of resistance) 200mg BD **OR** Amoxicillin (only if culture results available and susceptible) 500mg TDS Second line Pivmecillinam 400mg STAT then 200mg TDS **7 days treatment**	**If no upper UTI symptoms** First line: Nitrofurantoin (if eGFR≥45ml/min) 100mg M/R 100mg BD **OR** Trimethoprim (if low risk of resistance) 200mg BD **7 days treatment**	First line: Cefalexin 500mg BD or TDS (up to 1g-1.5g TDS or QDS for severe infections) **7-10 days treatment** Second line: Seek advice from the local Microbiologist	Contact local medical infection team (refer to contact details on page 21)

Infection	Comments	First Choice Antibiotics		Pregnancy and Breastfeeding	
		No allergy	Penicillin allergy	No allergy	Penicillin allergy
		If upper UTI symptoms present Cefalexin 500mg BD or TDS (up to 1g-1.5g TDS or QDS for severe infections) **OR** Co-amoxiclav (only if culture results available and susceptible) 625mg TDS **7-10 days treatment** **OR** Trimethoprim (only if culture results available and susceptible) 200mg BD **14 days treatment** **OR** Ciprofloxacin (oral) 500mg BD (consider safety issues) **7 days treatment**	**If upper UTI symptoms present** Trimethoprim (only if culture results available and susceptible) 200mg BD **14 days treatment** **OR** Ciprofloxacin (oral) 500mg BD (consider safety issues) **7 days treatment**		
Acute prostatitis BASHH CKS	Advise paracetamol (+/- low-dose weak opioid) for pain, or ibuprofen if preferred and suitable. Offer antibiotic. Review antibiotic treatment after 14 days and either stop antibiotics or continue for a further 14 days if needed (based on assessment of history, symptoms, clinical examination, urine and blood tests). **Send MSU for culture and start antibiotics.** **Consider STI screen and urology referral where necessary.** 4 week course may prevent chronic prostatitis Quinolones (consider safety issues) achieve higher prostate levels	**Treatment duration: 14 days then review** Frist line (guided susceptibilities when available: Ciprofloxacin (oral) 500mg BD (consider safety issues) or ofloxacin 200mg BD (consider safety issues) or trimethoprim (oral) 200mg BD (if unable to take quinolone Second line (after discussion with specialist) **14 days then review**: Levofloxacin 500mg OD (consider safety issues) **OR** co-trimoxazole 960mg BD		Not applicable	

Infection	Comments	First Choice Antibiotics		Pregnancy and Breastfeeding	
		No allergy	Penicillin allergy	No allergy	Penicillin allergy
Acute pyelonephritis CKS	Advise paracetamol (+/- low-dose weak opioid) for pain, or ibuprofen if preferred and suitable. If admission not needed, send MSU for culture & susceptibility for people aged ≥16 years and start empirical antibiotics. **Review MSU result once available and adjust treatment appropriately if necessary. Arrange if there is any clinical deterioration or the person does not respond to treatment within 24 hours.** **If extended-spectrum beta-lactamases (ESBL) risk** and with microbiology advice consider intravenous (IV) antibiotic via the Outpatient Parenteral Antimicrobial Therapy (OPAT) service. This service is managed by the acute trust and GPs would not be expected to prescribe intravenous antibiotics. For children: Ensure sample is taken and referral is made to paediatrics	Cefalexin (oral) for 7 days ≥16 years: 500mg BD or TDS For severe infections: Up to 1-1.5g TDS - QDS **OR** Co-amoxiclav (oral) for 7 days ≥16 years: 625mg TDS **OR if MSU results show susceptibility consider switch to:** Trimethoprim (oral) 200 mg BD for 14 days **OR** Ciprofloxacin (consider safety issues) 500mg BD for 7 days **Refer to hospital if 2nd line agent required**	**If susceptible,** Trimethoprim (oral) 200 mg BD for 14 days **OR** Ciprofloxacin (oral) 500 mg BD for 7 days **Refer to hospital if 2nd line agent required.**	Cefalexin (oral) 500mg BD-TDS (upto 1-1.5g TDS-QDS for severe infections **7-10 days treatment**	Contact local medical infection team for advice(see contact details on page 21)

Infection	Comments	First Choice Antibiotics		Pregnancy and Breastfeeding	
		No allergy	Penicillin allergy	No allergy	Penicillin allergy
SKIN INFECTIONS					
Refer to local infection department for all patients with known or suspected MRSA where oral antibiotics are required					
Impetigo CKS	A systematic review indicates topical and oral treatment produces similar results. Reserve topical antibiotics for very localised lesions to reduce the risk of resistance. Treatment for 7 days is usually adequate; max. duration of topical treatment 10 days. Reserve mupirocin for MRSA For extensive, severe, or bullous impetigo, use oral antibiotics for 7 days.	Flucloxacillin oral) 250-500 mg QDS for 7 days Topical Fusidic acid 2% TDS (thinly) for 5 days Mupirocin TDS for 5 days (if MRSA)	Clarithromycin (oral) 250 mg – 500 mg BD for 7 days	Flucloxacillin (oral) 250-500 mg QDS for 7 days	Erythromycin (oral) 250 mg – 500 mg QDS for 7 days
Cellulitis and Erysipelas CKS British Lymphology Society	**If river or sea water exposure, discuss with microbiologist** Class I: patient afebrile and healthy other than cellulitis, use oral flucloxacillin alone. **If river or sea water exposure:** seek advice. Class II febrile & ill, or unstable comorbidity, admit for intravenous treatment, or use OPAT (if available). Class III toxic appearance: admit. Deep pain may indicate severe streptococcal sepsis and will require IV therapy. Admit patients urgently in such circumstances for early surgical review. Do not prescribe topical antibiotics. There is no published evidence to support their use, and widespread use is likely to increase antibiotic resistance. **Erysipelas:** often facial and unilateral**.** Use flucloxacillin for non-facial erysipelas. **Arrange a review after 48 hours by telephone or face-to-face, depending on clinical judgement.**	**Non facial cellulitis/erysipelas** Flucloxacillin oral) 500 mg QDS for 7 days If unresolving, Clindamycin oral) 300-450mg QDS for 7 days **Facial cellulitis/erysipelas (non dental):** Co-amoxiclav (oral) 625 mg TDS for 7days	Clarithromycin oral) 500 mg BD for 7days If on statins: Doxycycline oral) 200mg stat on day 1, then 100mg daily for 6 days **OR** Clindamycin oral) 300mg-450 mg QDS for 7days **Stop clindamycin if diarrhoea occurs**	Flucloxacillin oral) 500 mg QDS for 7days	Erythromycin oral) 250 mg – 500 mg QDS for 7days – be particularly alert to deteriorating disease, carry out an early review
		If slow response, continue treatment for a further 7 days. Skin changes (such as discolouration) may persist for months or longer following severe cellulitis and do not necessarily require ongoing antibiotics.			

Infection	Comments	First Choice Antibiotics		Pregnancy and Breastfeeding	
		No allergy	Penicillin allergy	No allergy	Penicillin allergy
Mastitis CKS	*S. aureus* is the most common infecting pathogen. Suspect if woman has: a painful breast; fever and/or general malaise; a tender, red breast. Breastfeeding: oral antibiotics are appropriate, where indicated. Women should continue feeding, including from the affected breast Treat all non-lactating women with oral antibiotics; consider 24-48 hours of effective breast milk removal by expressing milk/breastfeeding from affected breast before starting antibiotics for lactating women. **If a breast abscess is suspected, the woman should be referred urgently to a general surgeon for confirmation of the diagnosis and management.**	Flucloxacillin 500mg QDS for 10-14 days	Erythromycin 250-500mg QDS for 10-14 days OR Clarithromycin 500mg BD for 10-14 days	Flucloxacillin 500mg QDS for 10-14 days days	Erythromycin 250-500mg QDS for 10-14 days
Diabetic foot infections	Refer for specialist (e.g. microbiologist, diabetes foot specialist) opinion unless mild, superficial wound margins. If diagnosis of mild cellulitis is suspected, treat as above. Check microbiology results in those who may have been previously treated. Refer MRSA and treatment failure cases				
Acne CKS	**Mild (open and closed comedones) or moderate (inflammatory lesions):** **First-line:** self-care (wash with mild soap; do not scrub; avoid make-up). **Second-line:** topical retinoid or benzoyl peroxide. **Third-line:** add topical antibiotic, or consider addition of oral antibiotic. **Severe (nodules and cysts):** add oral antibiotic (for 3 months max) and refer to a dermatologist.	First-line: Self-care NHS Choices Second-line: topical retinoid thinly OD OR over the counter (OTC) benzoyl peroxide 5% gel OD-BD (especially if papules and pustules are present) for 6-8 weeks Third-line: topical clindamycin 1% cream, thinly BD for 12 weeks Fourth- line:If treatment failure/severe: oral tetracycline 500mg BD OR oral doxycycline 100mg OD for 6-12 weeks Lymecycline 408mg OD should ONLY be considered in patients experiencing photosensitivity/ADRs/contraindication/intolerance/inefficacy with doxycycline.		Erythromycin (oral) 500 mg BD for 6-12 weeks	
Eczema CKS	If no visible signs of infection use of antibiotics (alone or with steroids) encourages resistance and does not improve healing. In eczema with visible signs of infection, use treatment as in impetigo (see page 12).				

Infection	Comments	First Choice Antibiotics		Pregnancy and Breastfeeding	
		No allergy	Penicillin allergy	No allergy	Penicillin allergy
Human or animal bites CKS	Ensure thorough cleaning of wound and check tetanus status. For further information and advice on tetanus schedule refer to Immunisation against Infectious Disease(The Green Book): Assess rabies risk. For advice on rabies prophylaxis, contact South East London Health Protection Team (HPT). Surgical toilet most important. Contact the South London HPT on 0344 326 2052 or via phe.slhpt@nhs.net; slhpt.oncall@phe.gov.uk. Human bites: Assess HIV/hepatitis B/hepatitis C risk. Thorough irrigation. Antibiotic prophylaxis is recommended. Animal bites: Cat bite: always give antibiotic prophylaxis, other animal give antibiotic prophylaxis if puncture wound; bite involving hand, foot, face, joint, tendon, ligament; immunocompromised, diabetics, elderly, asplenic, cirrhotic, presence of prosthetic valve or prosthetic joint **Review at 24 and 48 hours.** People with severely infected wounds or who are systemically unwell may require referral to A&E for IV antibiotics.	**First line animal or human prophylaxis and treatment:** Co-amoxiclav 625 mg TDS for 7 days Children with bites should also be treated with: Co-amoxiclav. See BNF-C for doses. Seek advice from the local Microbiologist if necessary (see contact details on page 21).	**First line prophylaxis or treatment for:** **Animal bite:** Metronidazole 400 mg TDS **PLUS** doxycycline 100 mg BD for 7 days **Human bite:** Metronidazole 400 mg TDS **PLUS** Clarithromycin 250 – 500 mg BD for 7 days **Animal or human bites in children under 12 years:** Metronidazole **AND** clarithromycin. See BNF-C for doses. Seek advice from the local Microbiologist if necessary (see contact details on page 20).	**Animal or human prophylaxis/treatment:** Co-amoxiclav 625 mg TDS for 7 days The use of a combination of co-amoxiclav is **NOT** recommended for women with Preterm Prelabour Rupture of Membranes or 4 weeks before term.	If pregnancy and rash after penicillin, refer to ambulatory.
Varicella zoster/ chickenpox CKS **Herpes zoster/ shingles** CKS	Pregnant/immunocompromised/ neonate: seek urgent specialist advice. Chickenpox: consider aciclovir if: onset of rash > 14 years of age; severe pain; dense/oral rash; taking steroids; smoker. Give paracetamol for pain relief. Shingles: treat if >50 years (Postherpetic neuralgia rare if, <50 years) and within 72 hours of rash, or if 1 of the following: active ophthalmic; Ramsey Hunt, eczema, non-truncal involvement, moderate/severe pain or rash Shingles treatment if not within 72 hours; consider starting antiviral drug up to 1 week after rash onset, if	First Line: Aciclovir 800mg, 5 TDS for 7 days Second line for shingles if poor compliance: Valaciclovir 1g TDS for 7 days		Seek urgent specialist advice	

Infection	Comments	First Choice Antibiotics		Pregnancy and Breastfeeding	
		No allergy	Penicillin allergy	No allergy	Penicillin allergy
	high risk of severe shingles or continued vesicle formation, older age, immunocompromised or severe pain				
Tick bites (Lyme disease) CKS	**Prophylaxis: Not routinely recommended**. If immunocompromised, consider prophylactic doxycycline. High-risk areas include grassy and wooded areas in southern England and the Scottish Highlands. Only give prophylaxis within 72 hours of tick removal. Give safety net advice about erythema migrans and other possible symptoms that may occur within 1 month of tick removal.	Prophylaxis: Doxycycline 200mg STAT Treatment Doxycycline 100mg BD for 21 days First alternative: Amoxicillin 1g TDS for 21 days	Prophylaxis: Doxycycline 200mg STAT Treatment Doxycycline 100mg BD for 21 days	Amoxicillin 1g TDS for 21 days	Contact local medical infection team for advice (see contact details on page 21)

Infection	Comments	Antibiotic treatment
SEXUALLY TRANSMITTED INFECTIONS (STIs): For guidance, refer to Southwark and Lambeth STI Management in Primary Care		
GASTROINTESTINAL INFECTIONS		
Infectious diarrhoea CKS	**Refer** previously healthy children with acute painful or bloody diarrhoea to exclude E. coli 0157 infection. Normal feeding should be restarted as soon as possible; there is no evidence that fasting will have any benefit. Fluid replacement is essential. Travel history should be reported if stool sample sent.	**Antibiotic therapy usually not indicated unless systemically unwell** as it only reduces diarrhoea by 1-2 days and can cause resistance. Initiate treatment, on advice of Microbiologist (see contact details on page 20). If systemically unwell and campylobacter suspected (e.g. undercooked meat and abdominal pain), consider clarithromycin 250–500mg BD for 5–7 days if treated early (within 3 days). If giardia is confirmed or suspected – tinidazole 2g single dose is the treatment of choice Notify suspected cases of food poisoning to, and seek advice on exclusion of patients from, South London HPT on 0344 326 2052, or email phe.slhpt@nhs.net ; slhpt.oncall@phe.gov.uk . Send stool samples in these cases.
Clostridium difficile	Stop unnecessary antibiotics and/or PPIs to re-establish normal flora. Stop any antidiarrhoeal agents in patients who are proven CD toxin positive. *Clostridium difficile* (CD) has been identified as a causative organism in pseudomembranous colitis/antibiotic-associated diarrhoea. Fluids and electrolytes should be replaced.	Some patients with recurrent *C. difficile* infections (CDI) may continue their treatment in a primary care setting, due to long-duration and/or tapering courses of vancomycin and attempts to avoid long hospital stays. *1st episode:* Oral metronidazole 400 mg TDS for 10-14 days *2nd episode/Severe CDI/ type 027: Oral* vancomycin 125 mg QDS for 10-14 days If severe symptoms or signs (see below) should treat with oral vancomycin, review progress closely and/or consider hospital referral Severe if T > 38.5^{0}C; WCC > 15 x10^9/L, rising creatinine (> 50% increase above baseline) or signs/symptoms of severe colitis (abdominal or radiological). **Fidaxomicin** (200mg PO BD for 10 days)- Treatment can be initiated in primary care after a recommendation from a Consultant Microbiologist. **Restricted to treatment of laboratory-confirmed clostridium difficile infection (CDI) in the following groups:** • Recurrence following vancomycin treatment • Patients who require ongoing concomitant antibiotic treatment • Patients who are immunocompromised and at risk of further recurrence Subsequent recurrences and all cases of severe CDI will require admission. If the patient is well enough to avoid admission to hospital, but has diarrhoea and there is a suspicion of CDI, for the first and second episodes, send a stool sample, rehydrate and consider treatment as above.

Infection	Comments	Antibiotic treatment
MENINGITIS		
Suspected meningococcal disease PHE	Transfer all patients to hospital immediately. Keep supply of benzylpenicillin and check expiry dates. **ARRANGE URGENT TRANSFER TO HOSPITAL**	**If time before hospital admission, and non-blanching rash, administer benzylpenicillin prior to admission, unless history of true anaphylaxis reaction to previous penicillin;** **Ideally administer IV bolus** but IM if a vein cannot be found. **Adults and children:** 10 yr and over: 1200 mg (1.2grams) Children 1 - 9 yr: 600 mg Children <1 yr: 300 mg **Past history of allergic responses other than anaphylaxis, such as a rash is not a contraindication to an urgent penicillin injection in this situation**. No alternative antibiotic is indicated in patients with anaphylactic reactions to penicillin. Prevention of secondary case of meningitis (prophylaxis): prescribe only on advice of South London HPT: on 0344 326 2052 or via phe.slhpt@nhs.net; slhpt.oncall@phe.gov.uk.
METHICILLIN RESISTANT STAPHYLOCOCCUS AUREUS (MRSA)		
MRSA infections CKS	For support in prophylaxis and treatment of MRSA infections contact the local Medical Infection team (refer to page 21 for contact details). For advice on infection control, contact the local Infection Prevention and Control Team (IPCT) (refer to page 21 for contact details). Severe MRSA infections would be better treated in secondary care, on an individual case basis, working closely with the IPCT.	
EYE CONDITIONS		
Conjunctivitis NHS Choices CKS (Infective) CKS (Allergic)	**Treat only if severe**, as most cases are viral or self-limiting especially in children. **Bacterial conjunctivitis:** usually unilateral and also self-limiting. It is characterised by red eye with mucopurulent, not watery discharge. 65% and 74% resolve on placebo by days 5 and 7.	First line: Self-care and OTC lubricant eye drops. Children rarely require treatment or exclusion (**PHE**) Bathe/clean eyelids with cotton wool dipped in sterile saline or boiled (cooled) water, to remove crusting Second line: Chloramphenicol 0.5% eye drops (available OTC to patients aged 2 years and above) 2 hourly for 2 days, then reduce frequency to 3-4 times a day OR 1% ointment (available OTC to patients aged 2 years and above) 3-4 times daily,or just at night if using eye drops Third line (as less gram-negative activity): Topical fusidic acid 1% gel BD **Treatment should continue for 48 hours after resolution**

Infection	Comments	Antibiotic treatment
Blepharitis CKS (Blepharitis) NHS Choices	**First line:** Self Care-Lid hygiene for symptom control, including: warm compresses; lid massage and scrubs; gentle washing; avoiding cosmetics. **Second line:** topical antibiotics if hygiene measures are ineffective after 2 weeks. **Signs of Meibomian gland dysfunction, or acne rosacea:** consider oral antibiotics.	First line: Self-care Second line: Topical chloramphenicol 1% ointment (available OTC only patients aged 2 years and above) BD 6 week trial Third line (excluding pregnancy and breastfeeding): Oral oxytetracycline 500mg BD 4 weeks (initial) then 250mg BD 8 weeks (maintance) OR Oral doxycycline 100mg OD 4 weeks (initial) then 50mg OD 8 weeks (maintance)
DENTAL INFECTIONS		
GPs should not be involved in prescribing antibiotics for dental treatment. Patients should be directed to their regular dentist or if this is not possible 111. Most dental conditions require dental input rather than antibiotics. Advise regular analgesia until a dentist can be seen. Also refer to: • NHS choices topic on Dental Abscess • British Dental Association Patient Information Leaflet		

Contact Details	
Guy's and St Thomas' NHS Foundation Trust	**Medical Infection team:** During working hours: (Monday – Friday, 9am – 5pm) Tel: 0207 188 3100 or call 0207 188 7188 (switchboard) Out of hours: Call switchboard on 0207 188 7188 and ask to speak to the Microbiology Registrar on call. **Infection Prevention and Control Team(IPCT)** Tel: 020 7188 3153 Email: gst-tr.infectiousdiseases@nhs.net
King's College Hospital NHS Foundation Trust	**Medical Infection team:** During working hours: (Monday – Friday, 9am – 5pm) Tel. 020 3299 9000 followed by extensions:34360/34358/34356 Out of hours: Call switchboard on 020 3299 9000 and ask to speak to the Microbiology Registrar on call. **Infection Prevention and Control Team(IPCT)** Tel: 020 3299 4374 Email: kch-tr.KCH-IC-Nurses@nhs.net

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