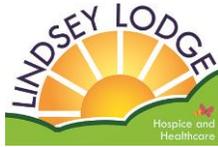


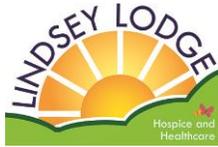
Lindsey Lodge Hospice and Healthcare

Antimicrobial Advice For Lindsey Lodge



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Disclaimer

Lindsey Lodge Hospice and Healthcare is a small organisation which aims to provide the highest level of clinical care that is individualised and most appropriate, for our patients.

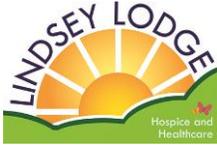
The following advice is taken from the local Trust Antimicrobial Resource which can be found through the intranet homepage. In some cases, this is verbatim.

In other cases, this has been adapted to reflect the common clinical situations that we encounter. For serious infections, admission to hospital may be required for the most effective therapy (and a prompt to consider this is listed).

Following clinical assessment and, or in line with patient wishes, it may be more appropriate to manage the patient out of hospital. Antibiotics listed in this guidance are those that can be available in the hospice and are for suggestion only.

For more detailed information on specific infections, and for advice on fungal infections, please consult the Trust Guidance directly. Considerations for dosing may be relevant for those at extremes of weight or for those with impaired hepatic or renal function.

The BNF should be consulted for safer dosing in such patients.



1 Introduction

Antimicrobials and antibiotics are a very important part of the therapeutic regimen. They differ from all other drugs, however, in that the use of an antibiotic on one patient can affect many other patients through the selection of resistant organisms. To this end it is important that antibiotic use is controlled and unnecessary use, which selects for bacterial resistance, is avoided. The aim of this document is to encourage the appropriate use of this valuable resource.

Recent increases in the incidence of MRSA and Clostridium difficile infections have prompted a complete revision of the Antibiotic Policy. The recommendations made in this document are specifically targeted at reducing the risk of these organisms. As such, the use of cephalosporins and quinolones is heavily discouraged. Specific instructions regarding difficult to treat organisms or infections are not included within the scope of this document, management of these organisms should be guided by reported sensitivities. National documents and references including the British National Formulary have been consulted.

1.2 Samples

Appropriate antibiotic use is best achieved when the target organism is known. To this end appropriate samples require to be collected prior to the antibiotic being administered unless immediate empirical treatment is indicated. The procedures for collecting appropriate microbiological samples, whilst relevant, are beyond the scope of this document. Full details of these procedures can be found in the Path Links Laboratory Handbook on the intranet.

When culture and sensitivity test results become available, any prior antimicrobial prescription should be reviewed and amended as indicated to ensure prescription of the most appropriate antibiotics. Any amendment must be documented in the medical notes to show that culture and sensitivity results have been acted upon.

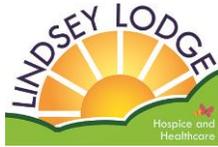
1.3 Contact Information

Advice regarding the diagnosis, treatment, prevention and control of infection including the appropriate use of antibiotics can be obtained from the Duty Consultant Microbiologist at any time by ST3 grade doctors and above through the hospital switchboards.

2 Prescribing of Antimicrobials

This advice is intended to:

- Ensure all antimicrobial agents are clinically indicated and essential.
- Ensure any allergy information relating to antimicrobials is clearly recorded on the front of all the prescription charts, including the nature of the reaction
- Ensure that prescriptions for antimicrobials are prescribed and administered at regular intervals.
- Ensure the correct route is prescribed
- Ensure all antimicrobial prescriptions have a specific indication documented on the prescription chart AND in the medical records at the point of prescribing
- Ensure all antimicrobial prescriptions have a "review" or "stop" date / length of course endorsed on the prescription chart at the point of prescribing. The duration should also be clear in the medical record.
- Ensure all antimicrobials are reviewed at 48 hours to either stop, de-escalate from IV to oral, change to narrower spectrum antibiotics or continue and review again at 72 hours.



2.1 General Points

Antimicrobials are only indicated when there is evidence of infection or when infection is to be actively avoided such as during surgery. The mere presence of an organism is not an indication for antimicrobials, thus an organism, even MRSA, isolated from a wound that is healing well with no signs of infection does not necessarily require antimicrobial treatment.

All doses given in these guidelines, unless specifically indicated otherwise, assume broadly normal renal and hepatic function. Doses may need to be adjusted if renal and hepatic function is impaired. Please exercise additional caution in prescribing antimicrobials in elderly patients, those who have had previous *Clostridium difficile* disease, who are GDH-positive or those who are not being normally fed (especially TPN or NG/Peg feeding) because they are at increased risk of *C. difficile* disease. In particular, cephalosporins, quinolones, clarithromycin and clindamycin should be avoided where less risk prone alternatives are safely available.

3. Regimens for Treatment of Common Infections

Empirical (Blind) Antimicrobial Chemotherapy

The initiation of antimicrobial chemotherapy should normally be withheld until appropriate specimens are collected and a microbiological diagnosis is made unless:

- the patient's defences are compromised
- a life-threatening infection is clinically evident or suspected
- appropriate laboratory investigations cannot be rapidly performed

In such cases antimicrobial chemotherapy should commence immediately after the collection of the diagnostic specimens.

4. Urinary Tract Infections

4.1.1 Uncomplicated Urinary Tract Infections (Simple cystitis)

Note:

- 1) In long-term catheterised patients only those with relevant clinical signs of infection need treatment.
- 2) Microscopic examination of urine alone is of limited value in unequivocally diagnosing infection; therefore any such emergency request is not normally entertained.
- 3) In recurrent prostatitis discuss treatment with Consultant Microbiologist.

First Line: **Nitrofurantoin** MR 100mg po every 12 hours or normal release 50mg po every 6 hours

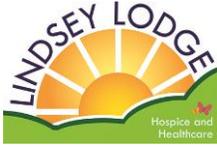
Duration: Females (non-catheterised) 3 days, Males 7 days

NOTE: Nitrofurantoin is both ineffective and toxic in renal failure and is contraindicated in patients with an eGFR <45ml/min. It is also ineffective in complicated UTIs and should only be used in simple cystitis

Second Line: **Pivmecillinam** 400mg po stat then 200mg po every 8 hours (400mg po every 8 hours if high resistance risk)

If sensitive organism – **Amoxicillin** 500mg po every 8 hours

Duration: Females (non-catheterised) 3 days, Males 7 days



Third Line (penicillin allergy): **Fosfomycin** 3g po single dose. Add second dose of 3g po on day 3 for male patients.

(NB outside licenced indications)

4.1.2 UTI in Patients with Catheters

- NB dipstick tests are not useful in catheterised patients (<https://www.nice.org.uk/guidance/qs90/chapter/Quality-statement-2-Diagnosing-urinary-tract-infections-in-adults-with-catheters>)
- Do not use prophylactic antibiotics for routine catheter changes unless there is a clear history of catheter-change associated UTI or trauma.
- In catheterised patients, antibiotic therapy is unlikely to eradicate asymptomatic bacteriuria.
- Short-term urinary catheters must be removed as soon as possible.
- Patients with a long-term catheter should be treated only if symptomatic and/or with significant ascending infection.
- Long-term antimicrobial prophylaxis is usually ineffective and promotes resistance so should NOT be used. Discuss alternative approaches with Consultant Microbiologist.
- NICE Guideline NG113: Urinary tract infection (catheter-associated): antimicrobial prescribing <https://www.nice.org.uk/guidance/ng113> has more information to support the management of these patients.

First Line: Trimethoprim 200mg po every 12 hours if sensitive organism

Duration: 7 days

Second Line: **Consider transfer to hospital for IV Gentamicin**

4.1.4 Complicated Urinary Tract Infection inc. Pyelonephritis

Consider need for single dose of gentamicin if no improvement after 24 hours and signs of systemic sepsis.

First Line: **Co-amoxiclav** 1.2 g IV every 8 hours with oral switch to **co-amoxiclav** 625mg orally every 8 hours

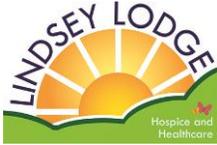
Duration: 7 days

Second Line (Penicillin allergy): **Ciprofloxacin** 500mg po every 12 hours (an initial dose of 400mg iv may be given if patient is vomiting)

Duration: 7 days

OR

If organism sensitive: **Trimethoprim** 200mg po every 12 hours for 14 days



4.1.5 Acute Prostatitis

First Line: Ciprofloxacin 500mg po every 12 hours

Duration: Up to 28 days

Second line: Trimethoprim 200mg po every 12 hours

Duration: Up to 28 days

4.1.6 Chronic Prostatitis

In recurrent or chronic prostatitis discuss treatment with Consultant Microbiologist

4.1.7 Epididymo-orchitis

If thought to be due to STI (refer to GUM for same/next day assessment) –consult Trust guidance

If thought to be due to enteric organism:

First line: **Co-amoxiclav** 625mg po every 8 hours

Duration: 10 days

Second line: **Ciprofloxacin** 500mg po every 12 hours

Duration: 10 days

4.2 Upper Respiratory Tract Infections

4.2.1 Influenza

Zanamivir or **oseltamivir** are recommended when influenza is circulating in the community, for the treatment of “at-risk” adults presenting with symptoms of influenza-like illness (ILI) who can commence treatment within 48 hours of the start of symptoms.

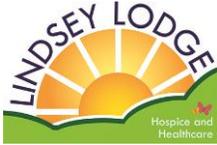
4.2.2 Otitis Externa, Infective

NB in the presence of infection do not use steroids alone. Keep dry.

See NICE Clinical Knowledge Summaries for advice about symptomatic treatment

<https://cks.nice.org.uk/otitis-externa>

<https://bnf.nice.org.uk/treatment-summary/ear.html>



4.2.3 Malignant Otitis Externa

Referral to ENT is advised

First Line: **Piperacillin/tazobactam** 4.5g IV every 8 hours, changing to **Ciprofloxacin** 750mg po every 12 hours once the patient is stable

Duration: 10-14 days total

Second Line (Beta-Lactam allergy): Contact Microbiologist

4.2.4 Otitis Media, Acute

Most cases of this are viral

First Line: Analgesics/anti-inflammatories only

Duration: 3 days – thereafter treat as chronic.

4.2.5 Otitis Media, Chronic

Referral to ENT is advised

First Line: Amoxicillin 500mg po every 8 hours

Duration: 5 days

Second Line (Beta-lactam allergy): Clarithromycin 500mg po every 12 hours

Duration: 5 days

4.2.6 Sore Throat/ Pharyngitis /Tonsillitis

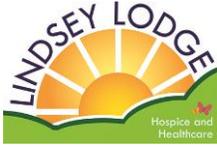
The majority of sore throats are viral in aetiology and most patients will not benefit from antibiotics. However, it is difficult to distinguish between viral and streptococcal infections. Patients with 3 of 4 centor criteria (history of fever, purulent tonsils, cervical adenopathy, and absence of cough) or history of otitis media may benefit more from antibiotics. Seven days treatment ensures less frequent relapse than three days. Prescribing antibiotics for sore throat only marginally affects the resolution of symptoms even for those identified as requiring antibiotics through centor criteria risk assessment. Antibiotics only reduce symptoms by 8 hours. Strategies for delayed or post-dated prescriptions should be considered for this group.

First Line: **Phenoxymethylpenicillin** 500mg po every 6 hours

Duration: 7 days.

Second Line (Beta-lactam allergy): **Clarithromycin** 500mg po every 12 hours

Duration: 7 days



Second Line (Failed therapy and confirmed EBV negative): **Co-amoxiclav** 625mg po every 8 hours

Duration: 7 days

4.2.7 Epiglottitis

First Line: **Cefotaxime** 2g iv every 8 hours

Duration: 7 days

Second Line (Beta-lactam allergy): Contact Consultant Microbiologist

4.2.8 Sinusitis, Acute

Most cases of this are viral

First Line: Analgesics/anti-inflammatories only

Duration: 3 days – thereafter treat as chronic.

4.2.9 Sinusitis, Chronic

First Line: **Co-amoxiclav** 625mg po every 8 hours

Duration: 5 days.

Second Line (Beta-lactam allergy): **Doxycycline** 100mg po every 12 hours

Duration: 5 days

Third Line: **Clarithromycin** 500mg po every 12 hours

Duration: 5 days

Seek ENT advice if complex or not responding

<https://www.nice.org.uk/guidance/ng79/resources/visual-summary-pdf-4656316717>

4.2.10 Tonsillitis (see Pharyngitis)

4.2.11 Whooping Cough

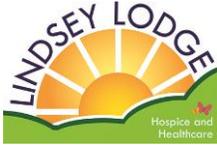
NB: This is a notifiable condition to Public Health England through NOIDS system.

Antibiotics have little effect if administered in the paroxysmal stage.

First Line: **Clarithromycin** 500mg po every 12 hours

Duration: 10 days

Second Line: Discuss with Consultant Microbiologist



4.3 Lower Respiratory Tract Infections Inc. COPD, Pneumonia, TB

4.3.1 Bronchitis, Acute

First Line: Symptomatic relief only

Duration: 3 days – thereafter treat as chronic

4.3.2 Bronchitis, Chronic and COPD, Acute Exacerbations Of

Draft NICE COPD guidelines (publication anticipated December 2018) state that ‘people who have exacerbations without more purulent sputum do not need antibiotic therapy unless there is consolidation on a chest X-ray or clinical signs of pneumonia’.

Offer an antibiotic for people with a severe acute exacerbation of COPD.

Consider an antibiotic for people with an acute exacerbation of COPD that is not severe, but only after taking into account: the number and severity of symptoms, bearing in mind that for people with less severe or fewer symptoms who are having treatment in the community there is evidence of uncertain benefit of antibiotics; whether they need to go into hospital for treatment; previous exacerbation and hospital admission history; and the risk of developing complications; previous sputum culture and susceptibility results; the risk of antimicrobial resistance with repeated courses of antibiotics.

<https://www.nice.org.uk/guidance/NG115>

<https://www.nice.org.uk/guidance/NG114>

First Line: **Doxycycline** 200mg po loading dose on day 1, then 100mg od po

Duration: 5 days

Second Line: **Amoxicillin** 500mg po every 8 hours

Duration: 5 days

Third Line: **Clarithromycin** 500mg po every 12 hours

Duration: 5 days

If severely unwell or higher risk of resistance (guided by susceptibilities where available), consider the following alternative choices:

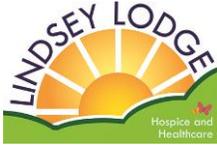
Co-amoxiclav 625mg po (or 1.2g IV) every 8 hours for 5 to 7 days

Levofloxacin 500mg po (only use IV route if not able to take orally) every 12 hours for 5 to 7 days

Co-trimoxazole 960mg po (or 1.44g IV) every 12 hours for 5 to 7 days

If *Pseudomonas aeruginosa* has been isolated. Please discuss case with Microbiologist or respiratory physician, as early aggressive eradication of new colonisation is likely to be beneficial (see BTS bronchiectasis guidelines)

4.3.3 Pneumonia



4.3.4 Community Acquired Pneumonia

CURB-65 (British Thoracic Society)

NOTE: Clinical or X-ray evidence of lobar consolidation required.

Score 1 for each

- acute unexplained **C**onfusion (mental test score <8, or disorientation in time/place/person)
- **U**rea > 7mmol/l
- **R**espiratory rate \geq 30/min
- **B**lood pressure – systolic <90 mmHg and/or diastolic \geq 60 mmHg
- Age **65** years or over

THE CURB-65 SCORE IS NOT A SUBSTITUTE FOR GOOD CLINICAL JUDGEMENT

Mild Pneumonia (CURB Score 0-1)

First Line: **Amoxicillin** 500mg-1g po every 8 hours

Duration: 5 days (consider extending course if no better by day 3)

Second Line: **Doxycycline** 200mg po loading dose on day 1, then 100mg od po

Duration: 5 days (consider extending course if no better by day 3)

Third Line: **Clarithromycin** 500 mg po 12 hourly

Duration: 5 days (consider extending course if no better by day 3)

Note: The first line choice does not cover atypical pathogens. Most of these are self-limiting infections but should be considered in cases of treatment failure

Moderate Pneumonia (CURB Score 2)

First Line: **Amoxicillin** 500mg - 1g po every 8 hours

plus clarithromycin 500mg po every 12 hours

Duration: 7 days

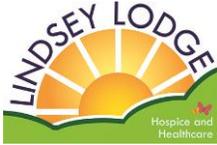
Second Line (Beta-lactam allergy): **Doxycycline** 100mg po every 12 hours

OR **Clarithromycin** 500mg po every 12 hours

Duration: 7 days

Third Line: **Levofloxacin** 500mg every 12 hours (or speak with Consultant Microbiologist)

Duration: 7 days



Severe Pneumonia (CURB Score ≥ 3 or Pa O₂ <8 KPa or Sa O₂ <92% on any Fi O₂)

Consider if transfer to hospital is most appropriate setting

First Line: **Co-amoxiclav 1.2g iv every 8 hours** (oral if iv not appropriate)
Plus clarithromycin 500mg iv every 12 hours – consider early oral switch

Duration: 7 -10 days

Second Line: **Cefuroxime 1.5g iv every 8 hours**

OR **Ceftriaxone 1-2g intramuscularly daily** if iv route not appropriate

plus clarithromycin 500 mg iv or po every 12 hrs.

Duration: 7-10 days

Third Line: **Levofloxacin 500mg po (or iv) every 12 hours.**

Alternatively discuss with Consultant Microbiologist

Duration: 7-10 days

NOTE: Clarithromycin is aimed at atypical organisms and its concomitant use with a Beta-lactam carries a significant Clostridium difficile risk. Furthermore it may act to antagonise the action of the Beta-lactam antibiotic. ENSURE THE MACROLIDE IS REALLY NECESSARY! Clarithromycin should be stopped once atypical pneumonia is excluded

4.3.5 Hospital-Acquired Pneumonia

(NB Respiratory samples are essential.)

Early onset (<5 days admission) or no antibiotics within the last 7 days:

Mild

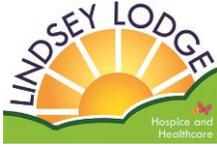
First Line: **Doxycycline 100mg po every 12 hours**

Duration: Review at 5 days

Second Line: **Amoxicillin 500mg-1g po every 8 hours**

Duration: Review at 5 days

Third Line: Discuss with Consultant Microbiologist



Moderate

First Line: **Co-amoxiclav** 1.2g iv every 8 hours (or 625mg orally every 8 hours if iv not appropriate) (+/- additional **amoxicillin**)

Duration: Review at 5 days

Second Line (Minor penicillin rash): **Cefuroxime** 1.5g iv every 8 hours

OR Ceftriaxone 1-2g intramuscularly daily.

Duration: Review at 5 days

Third Line: (Severe Beta-lactam allergy/MRSA risk): Discuss with Consultant Microbiologist

Late onset (>5 days admission and antibiotics within the last 7 days) **or severe:**

Consider transfer to hospital as appropriate

First Line: **Piperacillin/tazobactam** 4.5g iv every 8 hours (if severe, increase to 6 hourly)

Second Line (Minor penicillin rash) **Cefuroxime** 1.5g iv every 8 hours + **Metronidazole** 500mg iv every 8 hours – review daily with view to switch iv to oral

OR Ceftriaxone 1-2 g i intramuscularly daily + **Metronidazole** 500mg po every 8 hours

Second Line (penicillin allergy): **Clotrimazole** 960mg po every 12 hours (if severe, 1.44g iv every 12 hours)

Duration: Review after 5 days treatment

4.3.6 Pneumonia, Aspiration

NB This is not appropriate for aspiration in the absence of pneumonia. Consider if transfer to hospital for IV therapy is appropriate.

First Line: **Co-amoxiclav** 1.2 g iv every 8 hours or 625mg orally every 8 hours

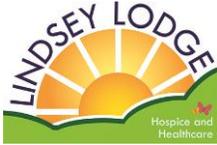
Duration: 5 days. Consider oral therapy if patient's condition permits.

Second Line (Minor penicillin rash): **Cefuroxime** 1.5g iv every 8 hours **or Ceftriaxone** 1-2g im daily

plus metronidazole 400mg orally every 8 hours

Duration: 5 days

Third Line: (Severe beta-lactam allergy/MRSA risk): Discuss with Consultant Microbiologist.



4.3.7 Empyema or Lung Abscess

NB: Endeavour to isolate infective agent before attempting antimicrobial therapy. Contact Consultant Microbiologist

4.3.8 Bronchiectasis

Consultant local Chest Physicians or the BTS Guidelines. <https://www.brit-thoracic.org.uk/document-library/clinical-information/bronchiectasis/bts-guideline-for-bronchiectasis-in-adults/>

<https://www.nice.org.uk/guidance/NG117>

4.4 Soft Tissue Infections

4.4.1 Bed Sores (See Ulcers)

4.4.2 Bites

First Line: **Co-amoxiclav 625mg po every 8 hours**

Duration: 7 days

Second Line (Beta-lactam allergy): **Doxycycline 100mg po every 12 hours plus metronidazole 400mg po every 8 hours**

Duration: 7 days

Human bites: Consider risks of blood borne viral infection eg Hepatitis B, C and HIV

4.4.3 Boils

NB: No antibiotic therapy is indicated, unless there are signs of cellulitis (see below), or if the patient is immunocompromised. Consult Consultant Microbiologist.

If widespread or recurrent boils seek advice from Dermatologist and consider investigation for Panton-Valentine Leukocidin (PVL) producing *Staphylococcus aureus*. For more information regarding diagnosis and management go to:

<https://www.gov.uk/government/collections/panton-valentine-leukocidin-pvl-guidance-data-and-analysis>

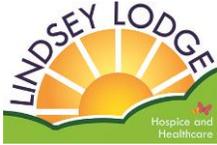
4.4.4 Burns (Uncomplicated)

Routine use of systemic antibiotics is NOT indicated.

4.4.5 Surgical Site Infections

First Line: **Co-amoxiclav 625mg po every 8 hours.**

Duration: 5 days



Second Line (Beta-lactam allergy): **Ciprofloxacin** 500mg po every 12 hours **plus metronidazole** 400mg po every 8 hours

Duration 5 days

Third Line:(MRSA risk): Treat according to susceptibility pattern.

4.4.6 Cellulitis

Simple cellulitis

First Line: **Flucloxacillin** 1g orally every 6 hours

OR Clarithromycin 500mg orally every 12hours (penicillin allergy)

First line (known MRSA colonisation): **Doxycycline** 100mg orally every 12 hours

OR Trimethoprim 200mg orally every 12 hours

OR Rifampicin 600mg orally every 12 hours

OR Fusidic acid 500mg orally every 8 hours

Duration: 7days

Second Line: IV therapy OR Clindamycin 450mg orally every 6 hours

Cellulitis with markers of severity

First line: **Flucloxacillin** 2g IV every 6 hours

OR Cefuroxime 1.5g IV every 8 hours (mild penicillin allergy)

OR Clindamycin 450mg PO every 6 hours (severe penicillin allergy)

Duration: Complete 10 days total antibiotics, switch to oral after 48-72hours.

If known MRSA colonisation, consider hospital transfer for IV Vancomycin

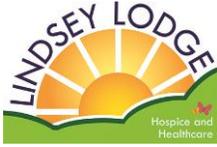
Second line: Consider hospital transfer for Daptomycin or Vancomycin IV

Cellulitis associated with lymphoedema

First Line: **Amoxicillin** 500mg orally 8 hourly

+/- **Flucloxacillin** 500mg orally 6 hourly(if clinical evidence of staph aureus infection)

OR Clarithromycin 500mg orally 12 hourly (Penicillin allergy)



OR Cefalexin 500mg orally 8 hourly (On statin)

OR Doxycycline 200mg once only then 100mg orally daily (Penicillin allergy on statin)

Duration: 14 days minimum (*until all signs of acute inflammation have resolved*)

Second Line: **Clindamycin** 300mg orally 6 hourly

Duration: 14 days minimum (*until all signs of acute inflammation have resolved*)

Prophylaxis should be considered for patients who have two or more attacks of cellulitis per year

Penicillin V 250mg orally 12 hourly (500mg if BMI >33) for 2 years.

Cefalexin 125mg orally at night **or** Doxycycline 50mg daily (on statin)

Trimethoprim 100mg orally at night (*for recurrent ano-genital cellulitis*)

4.4.7 Ulcers and other chronic, stable wounds

Antibiotics have no place in the management of chronic, stable wounds.

There is a large group of wounds (surgical or non-surgical) that are swabbed routinely which share a common pathophysiology. When wounds are **more than a month old**, they are known as chronic or established wounds because they develop a thick, avascular fibrous tissue layer through which underlying bacteria cannot get out and antibiotics cannot easily permeate. Such chronic wounds include:

- Chronic ulcers (including varicose leg ulcers and pressure sores)
- Post-surgical wounds more than a month old
- Sinuses and fistulae
- Stoma sites (colostomy, urostomy, etc.)

The above wounds will be colonised either with the patients' own flora or environmental organisms. Swabs taken from such wounds will **always** have growth and, as such, these lesions should not be swabbed (even if purulent). **They should NOT be treated with antibiotics.** Treatment of these cases will result in the emergence of antibiotic resistance. Wound debridement or cleaning without antibiotics will promote healing in most cases.

The complications of ulcers (cellulitis, osteomyelitis, etc.) should be managed as normal but it must be understood that antibiotic treatment is being given for these complications not for the ulcer or wound. For this reason, the use of topical antibiotics is strongly discouraged.

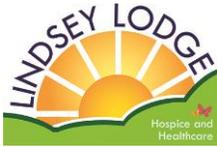
4.4.8 Diabetic Foot

These must be referred to the diabetic team for review as soon as practicable. A formal MDT may be necessary.

Uninfected: IDSA Grade 1

Foot wound not clinically infected i.e. no pus, erythema, pain, tenderness, warmth or induration.

First Line: Symptomatic treatment only.



Mild Infection: IDSA Grade 2

Indicated by the presence of ≥ 2 manifestations of inflammation (pus, erythema, pain, tenderness, warmth, or induration), but any cellulitis/erythema extends ≤ 2 cm around the ulcer, and infection is limited to the skin or superficial subcutaneous tissues; no other local complications or systemic illness.

First Line: **Flucloxacillin** 1g po every 6 hours

Duration: 5 – 7 days

Second Line (Beta-lactam allergy): **Doxycycline** 100mg po every 12 hours

OR Clindamycin 450mg po every 6 hours

Duration: 5 – 7 days

If MRSA infection suspected

Contact microbiology for advice

Moderate Infection: IDSA Grade 3 **Consider hospital for IV therapy**

Infection as above in a patient who is systemically well, metabolically stable but who one or more of the following; cellulitis extending to > 2 cm, lymphangitis, spread beneath the superficial fascia, deep tissue abscess, gangrene, or involvement of muscle, tendon, joint or bone. Surgical opinion required. Debridement of infected bone is essential for successful treatment.

First Line: If no antibiotics within 90 days **flucloxacillin** 500mg orally (or 1g IV if appropriate) every 6 hours **plus metronidazole** 400mg orally (Iv if appropriate) every 8 hours

OR Co-amoxiclav 625mg orally (IV if appropriate) every 8 hours

Duration: Review after 5 – 7 days, switch to oral after 48-72hrs if started IV

Second Line (Beta-lactam allergy): **Clindamycin** 450mg orally every 6 hours

Duration: Review after 5 – 7 days

If MRSA infection suspected

Contact microbiology for advice

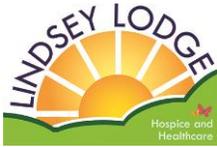
Severe Infection: Grade 4

Is infection in a patient with systemic toxicity (e.g. fever, chills, tachycardia, hypotension, confusion, vomiting, leukocytosis, acidosis, severe hyperglycaemia, or uraemia). This includes any patient with critical ischemia of the limb. Urgent IV antibiotics and surgical opinion are essential, where it is appropriate to do so. Debridement of infected bone is required for successful treatment. For those where hospital transfer or IV antibiotics are not appropriate:

First Line: **Clindamycin** 450mg po every 6 hours

Plus Ciprofloxacin 500mg po every 12 hours

Duration: 10-14 days



4.4.9 Breast Abscesses

Non-Lactational

First Line:	Co-amoxiclav 625mg po every 8 hours
Duration:	5 days
Second Line (Beta-lactam allergy):	Ciprofloxacin 500mg po every 12 hours plus Metronidazole 400mg po every 8 hours
Duration:	5 days

See trust guidance for lactational/mastitis

4.5 Gastrointestinal: Food Poisoning And Intra-Abdominal Sepsis

4.5.1 Cholecystitis (With Or Without Ascending Cholangitis) – Consider transfer to hospital where appropriate.

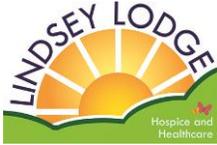
First Line:	Co-amoxiclav 1.2g IV (or 625mg orally if IV not appropriate) 8 hourly Plus Metronidazole 500mg IV (or 400mg orally) every 8 hours
Duration:	5 days, switch to oral after 48-72hours
Second Line (minor penicillin allergy):	Cefuroxime 1.5g IV every 8 hours OR Ciprofloxacin 500mg orally every 12 hours plus metronidazole 400mg orally every 8 hours
Duration:	5 days, switch to oral after 48-72 hours
Third Line (or severe penicillin allergy):	Consider transfer to hospital for IV Vancomycin

4.5.2 Peritonitis (Surgical Abdomen Inc Appendicitis & Diverticulitis) & SPB (ascetic fluid WCC >0.5 x 10⁹ or neut >0.25)

Mild /Moderate

First Line:	Co-trimoxazole 960g orally every 12 hours
Duration:	5 days
Second Line (penicillin allergy):	Ciprofloxacin 500mg orally every 12 hours
Duration:	5 days

Severe – consider transfer to hospital



First Line:	Piperacillin/Tazobactam 4.5g IV every 8 hours
Second Line:	Cefuroxime 1.5g IV every 8 hours Plus Metronidazole 500mg IV every 8 hours
Third Line	Consider hospital for IV Levofloxacin

Duration: 5-7 days

4.5.3 Antibiotic (Clostridium difficile) Associated Diarrhoea

Defined as diarrhoea AND one of the following:

- Positive C. Diff toxin test
- Results of C. Diff toxin text pending AND clinical suspicion of CDI

FIRST EPISODE

If clinically appropriate, discontinue non-C diff antibiotics to allow normal intestinal flora to be re-established. Review PPIs. Isolate patient.

Mild disease **No signs of severe infection (WCC>15, Elevated Cr, signs of colitis), <3 stools per day**

Conservative Management only

Moderate disease **No signs of severe infection, 3-6 stools per day**

Metronidazole 400mg orally every 8 hours, 10-14 days duration

Severe disease **WCC>15 or Elevated Cr or signs of colitis or >7 stools per day**

Vancomycin 125mg orally every 6 hours, 10-14 days duration

If no improvement, consider discussion with microbiologist regarding **Fidaxomicin**

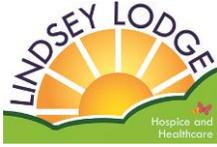
Diarrhoea should resolve in 1-2 weeks. Treatment should not normally be deemed a failure until day 7 unless developing symptoms of severe infection.

RELAPSE

MUST discontinue non-C. diff antibiotics if at all possible. Review all drugs with gastrointestinal activity or side effects esp PPIs and opiates. Isolate patient.

Commence **Vancomycin** 125mg orally every 6 hours, 10-14 days.

Second relapse, discuss with microbiologist



4.6 Genital Tract

4.6.1 Epididymo-orchitis

If thought to be STI consider referral to GUM for same day/next day assessment

First Line: **Ceftriaxone** 500mg im or iv single dose

plus doxycycline 100mg po every 12 hours

Duration: 14 days

Second Line (Beta-lactam allergy): **Moxifloxacin** 400mg PO every 24 hours

Duration: 14 days

*If gonorrhoea likely, add **azithromycin** 1g PO single dose*

If thought to be enteric organism

First line: **Co-amoxiclav** 625mg orally every 8 hours

Duration: 10 days

Second line: **Ciprofloxacin** 500mg orally every 12 hours

Duration: 10 days

4.7 Ophthalmic infections

4.7.1 Conjunctivitis In Persons Who Do NOT Wear Contact Lenses

NB: Do not use steroid-containing eye medications. If no response after 3 days treatment, seek advice from Ophthalmologists.

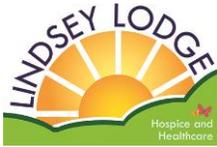
First Line: **Chloramphenicol 0.5% drops**: apply 1 drop every 2 hours for 2 days, topical. Then reduce to 1 drop every 6 hours for up to 5 days

OR Chloramphenicol 1% ointment: apply every 6 hours daily, topically for 2 days then reduce to 12 hours daily for up to 5 days.

Second Line: **Fusidic acid 1% gel**: apply 1 drop every 12 hours, topical. For up to 7 days

Third Line: **Azithromycin 1.5% eye drops**: 1 drop every 12 hours for 3 days

4.7.2 Conjunctivitis In Persons Who Wear Contact Lenses



NB: Do not use steroid-containing eye medications. If no response after 3 days treatment, seek advice from Ophthalmologists.

First Line: **Moxifloxacin 0.5% drops:** 1 drop every 2 hours topically, for first 2 days then reduce to every 6 hours.

Duration: Until 48 hours after clinical resolution – up to 7 days

4.7.3 Conjunctivitis, Chlamydial

First Line: Single dose **Azithromycin 1g** orally

Second Line: **Doxycycline 100mg** po every 12 hours

Duration: 7 days

4.7.4 Conjunctivitis, Post- traumatic

Seek advice from Ophthalmologists before commencing treatment.

4.7.5 Periorbital cellulitis (>12 years)

First Line: **Ceftriaxone 1-2g IV** every 24 hours

Co-amoxiclav 625mg every 8 hours, once improvement

Second Line (Severe beta-lactam allergy/MRSA risk) **Levofloxacin 500mg** po every 24 hours **plus clindamycin 450mg** po every 6 hours

Duration: 7 – 10 days.

If MRSA suspected, consider hospital transfer for IV Vancomycin

4.7.6 Orbital (post-septal) cellulitis

Urgent ENT and ophthalmology review is required.

4.8 Bone & Joint Infections

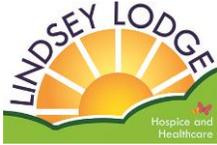
Specimens: aspirate all discharging pus or synovial fluid and collect blood for culture.

4.9.1 Arthritis, Septic

Referral to Orthopaedics is recommended in all cases. **Consider hospital for intravenous therapy**

First Line: **Flucloxacillin 2g IV** (orally if iv not appropriate) every 6 hours

OR Co-Amoxiclav 1.2 IV /Cefuroxime 1.5g IV every 8 hours if gram negative likely



Duration: Review after 14 days

Second Line (mild penicillin allergy): **Clindamycin** 450mg po every 6 hours
 (transfer to hospital for IV clindamycin if appropriate)

Duration: Review after 14 days

Third Line (severe penicillin allergy): Consider transfer to hospital for IV Vancomycin

Note: Follow on oral therapy may be required for many weeks.

REFERENCES: NLAG Antibiotic Formulary and Prescribing Advice for Adult Patients Version 8.0, January 2019.				
ISSUE DATE December 2016, review 2 yearly				
To Be reviewed	Review completed	By	Approved By	Circulation
December 2018	December 2018	LA	QA	Yes
September 2019 – introduction of IVs	October 2019	LA	QA	Yes
October 2021	October 2021	LA	QA sub-committee	L: Policies, Procedures & Guidelines
October 2023				

Management of Infections in Adult Patients Short Guide to First-Line Antimicrobial Recommendations

BEFORE PRESCRIBING ANTIMICROBIALS, ADEQUATE CULTURES AND RELEVANT SAMPLES SHOULD BE TAKEN WHERE POSSIBLE. ALSO TAKE INTO ACCOUNT:

Drug allergies & sensitivities Drug-drug and -food interactions Contraindications Recent antibiotic use Clostridium difficile risk
Ideal Body Weight (IBW) Renal Function Hepatic Function Past Medical History

PIPERACILLIN/TAZOBACTAM AND MEROPENEM ARE HEAVILY RESTRICTED ANTIBIOTICS.

**ANY USE OUTSIDE THE ANTIMICROBIAL GUIDELINES REQUIRES MICROBIOLOGY APPROVAL WITHIN 24 HOURS OF INITIATION
PHARMACY WILL LIMIT SUPPLY TO 24 HOURS IF APPROPRIATE INDICATION OR MICROBIOLOGY APPROVAL IS NOT MADE CLEAR ON THE PRESCRIPTION.**

For management of SEPSIS of unknown source in Adult Patients – see separate poster

**In cases of Neutropenic Sepsis, high risk of MRSA, or high risk of ESBL – refer to the full version of the antimicrobial guidelines, via the ULHT intranet.
For further advice please contact Consultant Microbiologist via Switchboard.**

CNS INFECTIONS

Meningitis:
Cefotaxime 2g 6 hourly IV.
Refer to Antimicrobial Guidelines if severe penicillin allergy.
If >55yr old, or pregnant, or immune dysfunction ADD amoxicillin 2g 4 hourly IV.
Refer to Antimicrobial Guidelines if penicillin allergy.

Brain abscess:
Cefotaxime 2g 6 hourly IV + metronidazole 500mg 8 hourly IV
and refer to Neurosurgeon.
Refer to Antimicrobial Guidelines if severe penicillin allergy.
If previous neurosurgery: Meropenem 2g 8 hourly IV + vancomycin IV (see Antimicrobial Guidelines for dosing) and refer to Neurosurgeon.
If severe penicillin allergy contact Consultant Microbiologist.

HSV ophthalmitis:
Aciclovir 10mg/kg IBW 8 hourly IV.

SUSPECTED ENDOCARDITIS (Initial blind treatment)

Take 3 sets of blood cultures over an hour and URGENTLY contact Consultant Microbiologist BEFORE starting treatment.

Native valve: Indolent: Amoxicillin 2g 4 hourly IV
If penicillin allergic use vancomycin (see Antimicrobial Guidelines for dosing) + gentamicin 1mg/kg IBW 12 hourly IV (NOT once daily regimen).

Prosthetic valve: Vancomycin (see Antimicrobial Guidelines for dosing) + gentamicin 1mg/kg IBW 12 hourly IV (NOT once daily regimen) + rifampicin 600mg 12 hourly IV or PO.

URINARY INFECTIONS

Pyelonephritis / Urinary Sepsis (check previous cultures & sensitivity results): Co-amoxiclav 1.2g 8 hourly IV.
If penicillin allergic use ciprofloxacin 500mg 12 hourly PO.

Epididymo-orchitis:
Suspecting STI? Ceftriaxone* 500mg single dose IM or IV + doxycycline 100mg 12 hourly PO. If gonorrhoea likely, ADD azithromycin 1g stat PO.
* If penicillin allergic contact Consultant Microbiologist.

Not suspecting STI? Co-amoxiclav 625mg 8 hourly PO (Consider 1.2g 8 hourly IV if unwell).
If penicillin allergic, refer to Antimicrobial Guidelines.

Acute Prostatitis:
Ciprofloxacin 500mg PO (or 400mg IV) 12 hourly if not tried in primary care, otherwise contact Consultant Microbiologist.

SOFT TISSUE INFECTIONS

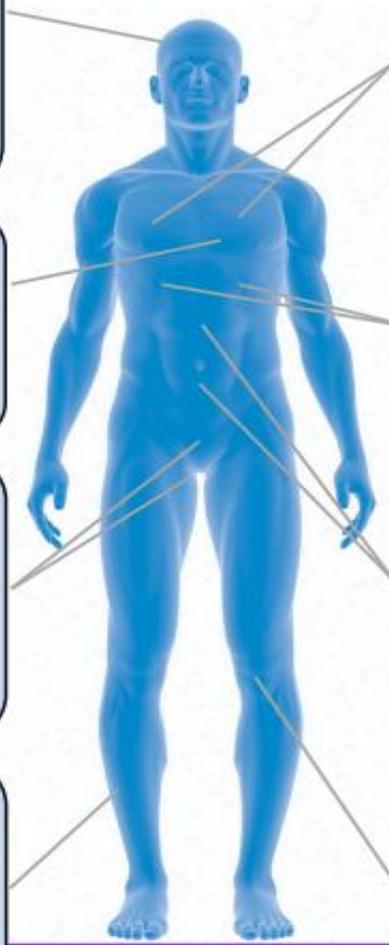
Cellulitis (no known MRSA colonisation):
Flucloxacillin 1g 6 hourly PO (or 2g 6 hourly IV if severe) and then follow algorithm in Antimicrobial Guidelines.
If penicillin allergic refer to algorithm in Antimicrobial Guidelines.

Necrotising fasciitis: URGENT debridement
Meropenem* 2g 8 hourly IV + clindamycin 1.2g 6 hourly IV.
* If severe penicillin allergic contact Consultant Microbiologist.

Surgical wound infections:
Gastrointestinal or genitourinary tract surgery:
Co-amoxiclav 625mg 8 hourly PO.
If penicillin allergic contact Consultant Microbiologist.

Clean surgery not involving GU/GI tract:
Flucloxacillin 500mg 8 hourly PO.

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COMMUNITY-ACQUIRED PNEUMONIA

If pneumonia developed in hospital setting, refer to guidance for Hospital-Acquired Pneumonia instead.

Urinary antigen testing advised for Community-Acquired Pneumonia, to guide 72 hour review.

CURB 0-1: Amoxicillin 500mg to 1g 8 hourly PO.
If penicillin allergic use Doxycycline 200mg loading dose on day 1, then 100mg 24 hourly PO from day 2.

CURB 2: Amoxicillin 500mg to 1g 8 hourly PO + clarithromycin 500mg 12 hourly PO.
If penicillin allergic use doxycycline 100mg 12 hourly PO OR clarithromycin 500mg 12 hourly PO as single agent.

CURB ≥ 3: Co-amoxiclav 1.2g 8 hourly IV + clarithromycin 500mg 12 hourly PO (give IV only if PO route is not available).
If minor penicillin allergic (rash) use cefuroxime 1.5g 8 hourly IV + clarithromycin 500mg 12 hourly PO (only give IV if PO route is not available).
If severe penicillin allergic use levofloxacin 500mg 12 hourly (only give IV if PO route is not available).

HOSPITAL-ACQUIRED PNEUMONIA

≤ 5d onset: if mild: Doxycycline 100mg 12 hourly PO

<5d onset: if moderate: Co-amoxiclav 1.2g 8 hourly IV.
If minor penicillin allergic (rash) use cefuroxime 1.5g 8 hourly IV.
If severe penicillin allergic contact Consultant Microbiologist.

>5d onset or severe: Piperacillin/tazobactam 4.5g 8 hourly IV.
If minor penicillin allergic (rash) use ceftazidime 2g 8 hourly IV + metronidazole 500mg 8 hourly IV.
If severe penicillin allergic contact Consultant Microbiologist.

ABDOMINAL INFECTIONS

Acute surgical abdomen: Includes Appendicitis, Cholecystitis, Diverticulitis, Peritonitis, Hepato-biliary sepsis:
Co-amoxiclav 1.2g 8 hourly IV.
If minor penicillin allergic (rash), use cefuroxime 1.5g 8 hourly IV + metronidazole 500mg 8 hourly IV.
If severe penicillin allergic use vancomycin IV + metronidazole 500mg 8 hourly IV + gentamicin IV (see antimicrobial guidelines for vancomycin and gentamicin dosing).
Substitute Ciprofloxacin 400mg 12 hourly IV for the gentamicin if concerned about nephrotoxicity or AKI (500mg 12 hourly PO once able to absorb).

G.I. bleed secondary to hepatic cirrhosis:
Co-amoxiclav 1.2g 8 hourly IV OR Ciprofloxacin 400mg 12 hourly

BONE & JOINT INFECTIONS

Osteomyelitis OR septic Arthritis: Flucloxacillin 2g 6 hourly IV and refer to Antimicrobial Guidelines for addition of second agent. For penicillin allergic patients, or those with prosthetic materials, discuss with Consultant Microbiologist.

Diskitis: Ciprofloxacin 500mg 8 hourly PO (or 400mg 8 hourly IV) + rifampicin 600mg 12 hourly PO or IV.

Open Fractures: Flucloxacillin 2g 6 hourly IV + metronidazole 500mg 8 hourly IV (+ gentamicin 160mg stat IV if visibly soiled).
If minor penicillin allergic (rash) use cefuroxime 1.5g 8 hourly IV + metronidazole 500mg 8 hourly IV (+ gentamicin 160mg stat IV if visibly soiled).
If severe penicillin allergic or MRSA risk refer to Antimicrobial Guidelines.

Ideal Body Weight (IBW) Calculations

Female IBW = 45 + (0.91 x (ht. in cm - 152.4))
Male IBW = 50 + (0.91 x (ht. in cm - 152.4))
If patient = 150cm tall, use IBW = 45kg (females), 50kg (males)