Newham University Hospital NHS
NHS Trust

Guideline title: Trust Antibiotic 'Quick Guide' Guideline for Adults

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Consultation:	**Chief Pharmacist and Clinical Pharmacists** **Members of the Trust Infection Control Committee** **Members of the Joint Infection Control Committee** **Members of the Trust Medicines Committee** **Consultant Advisory Group**
Date of Last Review (if applicable)	July 2007
Next Formal Review Date:	November 2010
Approval Date	Trust Medicines Committee: September 2008 CPPC: November 2008
Distribution:	To all clinical departments within the Trust

Document Revision Record (if applicable)

Description of Change(s)	**Reason for Change**	**Author & Group(s)**	**Date:**
Review of all antibiotics prescribed in the Trust, specifically to reduce quinolone and cephalosporin use	To attempt to reduce in the incidence of *Clostridium difficile* infection. Based on surveillance of changing antibiotic susceptibilities of clinical isolates.	Consultant Microbiologists (Dr C Rosmarin Dr P Wilson)	June 2008
Update of therapeutic drug monitoring of antibiotics	New data	Consultant Microbiologist (Dr C Rosmarin) Chief Pharmacist (Mr I Davidson)	October 2008

Synopsis:
The following document provides a revised set of guidelines for prescribing antibiotics within Newham University Hospital NHS Trust. This updated version takes into account both local susceptibility patterns of infection as well as the need to reduce the number of patients developing antibiotic related *Clostridium difficile* infections. While any antibiotic can predispose to *Clostridium difficile* infection, the cephalosporins and quinolones are recognised as the major antibiotic risk groups.

In addition to a change in the empiric antibiotic of choice for many infections, the recommended duration of treatment for each condition has been advised. We recommend adherence to these durations, regular review of antibiotics and discussion with microbiology if necessary. We also recommend early switch from intravenous to oral therapy, with review at 48hours and daily thereafter.

General principles to be followed are:

- short courses of antibiotics are preferable
- all intravenous antibiotics will continue to be reviewed at 48hours
- prophylactic use of antibiotics involves a single dose, which needs to be given before knife to skin

Prescribers are expected to follow these guidelines and discuss with the antibiotic pharmacist or microbiologist should deviations be clinically indicated.

This revised guidance will be closely monitored to ensure the use of antibiotics remains effective.

Aims & Objectives: Effective prescribing of antibiotics including duration of therapy

Who the policy/guideline applies to/is relevant to: All clinical staff who prescribe and administer antibiotics to adults. Refer to paediatric policy for children.

Training implications:
To follow attached guidance and seek advice from the microbiologist and/or antimicrobial pharmacist as indicated to discuss individual patients' treatment and care.

Equipment:

A hard copy of this policy will be available on each clinical area.

A pocket-sized copy will be carried by clinical staff involved in the prescribing of antibiotics

Outcome measures and monitoring:

1. Overall adherence to these guidelines will be monitored on a daily basis by the ward pharmacists, assisted by the antimicrobial pharmacist and microbiologist.
2. Regular prescribing audits will be undertaken.
3. IV to oral switch will be monitored.
4. Allergy alerts monitoring regarding antibiotic therapy.
5. Ongoing regular update of policy.

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Monitoring;
Audits to be fed back to relevant staff and committees
Review of any incident forms/risk assessments

The findings will be reported back to each endorsing committee/group for 'their' documents

Appropriate use: For all adult patients receiving antibiotics in the trust

Inappropriate use: Paediatric patients (see separate guideline). Parts of the policy do not apply to patients being discharged from A&E who are not to be admitted.

What to do if policy is not followed by others:

- Education of clinical staff involved
- Completion of an incident form if required
- Ongoing monitoring of adherence
- Regular review of policy

BRIEF GUIDE ON ANTIBIOTIC CHOICE IN ADULT IN-PATIENTS

- For more information refer to full Trust guidelines on Datix and BNF
- Always discuss with microbiologist if unsure
- Doses may need to be adjusted in renal or liver impairment – discuss with pharmacy
- Ensure samples are taken prior to starting antibiotics when feasible
- Always base antibiotics on culture results if these are available
- Consider iv to oral switch as soon as possible
- ALWAYS DOCUMENT ALLERGIES ON DRUG CHART PRIOR TO PRESCRIBING

Guidance for confirmed or suspected penicillin allergy

True IgE dependent penicillin allergy is rare (0.05%), but serious (5-10% mortality). There is no apparent association between true penicillin allergy and atopy. Features of this severe penicillin allergy include those of an **anaphylactic** reaction e.g. **bronchospasm**, **urticaria**, **oedema**, **hypotension.** In such cases DO NOT prescribe penicillins. All antibiotics containing penicillin are highlighted in RED in the policy for ease of identification.

Other β-lactams (cephalosporins and/or carbapenems) should be avoided in patients with a true severe penicillin allergy unless their benefit clearly outweighs the risk (i.e. life-threatening infection with no other adequate alternative), and only after discussion with microbiology. This is due to the fact that approximately 10% of these patients will have a cross-allergy to the other β-lactams. These other β-lactams are highlighted as ORANGE in the policy

Milder forms of 'allergy' usually involve a mild rash in about 1-10% of patients. 85% of patients who report this type of penicillin allergy can tolerate it if given again. It is therefore important to record the type of allergic response as rash only or anaphylaxis. This may be important in future use for potentially life threatening conditions.

SEPSIS = high suspicion or proven infection AND 2 or more of the following SIRS (**systemic inflammatory response syndrome**) criteria:

1. Heart rate > 90 beats/min
2. Temperature < 36 °C or > 38 °C
3. Respiratory rate > 20 breaths/min or, P_aCO_2 less than 4.3Kpa
4. White blood cell count < 4 $x10^9$ or > 12 $x10^9$ cells/L, or > 10% band forms

SEVERE SEPSIS = sepsis plus acute organ dysfunction &/or hypotension

SEPTIC SHOCK = severe sepsis despite adequate fluid resuscitation

CONTACT LIST

WORKING HOURS **(9.30am –5.30pm)**	
MICROBIOLOGY	
Microbiology Specialist Registrar	07887 856174
Dr. Peter Wilson Consultant Microbiologist	mobile via switchboard or via secretary RLH ext 60333
Dr Caryn Rosmarin Consultant Microbiologist/Infection Control	Ext. 5655 or mobile via switchboard
Microbiology Results line	020 3246 0316
Microbiology Laboratory **NB:ALWAYS TELEPHONE THE LAB**	020 3246 0316/8 **WHEN SENDING URGENT SPECIMEN**
INFECTION CONTROL	
Infection Control Nurses	Ext. 5653/ 8930/ 8840 Bleeps 273 & 275
PHARMACY	
Antibiotic pharmacist	Bleep 026
VIROLOGY	
Virology Specialist Registrar Consultant on cover	0203246 0293/1097 (based at Royal London) or Bleep 0184 (based at Royal London) via RLH switchboard
PUBLIC HEALTH	
Public Health - for notifiable diseases Health Protection Unit – HPU	020 7220 4500 and ask for the on call team 0207 759 2860
OUT OF HOURS **(includes weekends, Bank holidays and 5.30 pm – 9.30 am on weekdays)** **CONTACT ON-CALL STAFF THROUGH THE NEWHAM SWITCHBOARD**	
Microbiology & Infection Control advice	On-call Microbiology Specialist Registrar
all Laboratory investigations ALWAYS call to process URGENT out-of-hours specimens	Duty BMS (BioMedical Scientist)
for **Virology Clinical advice**	On-call Virologist
Public Health queries or notifications	On-call Public Health doctor 07623 541 417

Guidance for the prescribing and monitoring of Gentamicin in Adults

Gentamicin is given as single daily doses EXCEPT in the treatment of endocarditis.
Gentamicin dosage and interval is dependent on patient's weight and renal function and MUST be modified following checking of serum levels

Initial Dose
In acute sepsis and for stat doses, bactericidal levels of gentamicin are required. Dose is based on creatinine clearance (CrCl) (based on ideal body weight). If no recent creatinine available and the patient is elderly or you suspect renal failure, give the lower dose.

If CrCl** >20ml/min, the dose is 5-7mg/kg* od IV (*ideal body weight–see vancomycin dosing)
If CrCl** <20ml/min, the dose is 2-3mg/kg* od IV

**See formula for creatinine clearance (CrCl) under vancomycin dosing in next section.

Levels
Trough should be taken 18-22 hrs after the initial dose. This trough level is used to determine whether it is safe to give a further dose.

Timing of doses in patients with NORMAL renal function

- GIVE the FIRST dose when clinically indicated.
- GIVE second AND subsequent doses at around 13h00 on the following days. This allows time to get the result of the morning specimen. Please ensure it reaches the lab promptly for the 10am transport to the Royal London chemistry lab.
- If this level is in range, subsequent gentamicin levels should be done 2-3 days AFTER the dose (i.e. on the 3rd or 4th day of treatment) provided renal function remains normal. If renal function deteriorates refer to section for renal failure.
- INTERPRET result as follows:
- Gentamicin level <1mg/l – give more gentamicin at the SAME dose and interval (normally 24hrly), at 13h00. Recheck levels twice weekly.
- Gentamicin level 1-2mg/l – REDUCE gentamicin dose by approximately 25% and administer at 13h00. RECHECK level on following day and interpret as previously.
- Gentamicin level >2mg/l – OMIT day's gentamicin dose. Recheck renal function and recalculate doses given previously. Repeat level on following morning and interpret as above
- Note: high levels, >6-8mg/l or even >10mg/l are strongly suggestive of errors in timing of collection of serum level relative to last gentamicin dose or sample collection through line used for gentamicin administration. They are less often the result of overdose. Please check for reason and contact pharmacy and/or microbiology.

Timing of doses in patients in renal failure

- This advice applies to patients with significantly impaired renal function, with estimated creatinine clearance below 20mls/min.
- Give the FIRST dose when clinically indicated.
- COLLECT a serum sample on the next day at approximately 18-22 hrs after the dose.
- INTERPRET result as follows:
- Gentamicin level <1mg/l – This result suggests that patient may not still be in renal failure OR there may have been an error. Confirm renal function, that serum was collected correctly / gentamicin administered and request laboratory to confirm result. Document in notes. If result and clinical status of patient confirmed, give more gentamicin at the SAME dose as previously at 24hrly intervals, at 13h00. Recheck levels twice weekly. If renal function improves or impairment considered minor, increase dosage by 25% and recheck level on next day.
- Gentamicin level 1-2mg/l AND interval between last dose and sample collection 18-22hrs – REDUCE gentamicin dose by approximately 25% and administer at 13:00hrs. RECHECK level on following day and interpret as previously.
- Gentamicin level >2mg/l – OMIT day's gentamicin dose. RECHECK level on next day and administer 2mg/kg doses when levels have dropped to <1mg/l. Levels MUST be checked DAILY until a steady state is achieved.

Guidance for the prescribing and monitoring of Vancomycin in Adults

1. Estimate creatinine clearance (CrCl) (important: do not use eGFR without correction for patients own body surface area)[2]	Creatinine Clearance (ml/min) = N x (140 - age) x weight* (kg) / serum creatinine (µmol/L)	
	N = 1.23 for males N = 1.03 for females	* if > 20% obese – use ideal body weight (IBW) plus 40% of excess body weight (EBW) IBW [males 50kg, females 45kg] + 2.3kg per inch over 5ft EBW = total body weight - IBW

2. Select initial dose and dose interval[3]	CrCl (mL/min)	Starting dose (slow infusion)	Interval
	>100	1 gram	**8** hours
	65-100	1 gram	12 hours
	55-65	750mg	12 hours
	45-55	1 gram	**24** hours
	35-45	750mg	24 hours
	25-35	500mg	24 hours
	<25	500mg stat	Wait for levels

3. Monitor levels	When to take blood	How often	Monitoring
	Blood for vancomycin levels should be taken immediately before the dose is due. This is the trough or pre-dose level. There is no need to withhold the dose following the level UNLESS CrCl is <25ml/min OR a previous level was very high.	This depends on renal function. If CrCl is >55ml/min check level before the 3rd or 4th dose. If CrCl is 25-55ml/min, check level before the 3rd dose. If CrCl is <25ml/min, check before giving any further doses	Repeat levels every 3 days if renal function is stable. Discuss with pharmacy or microbiology if renal function unstable

4. Adjust dosing	Adequate	Level too high	Level too low
	10-15mg/L May be higher (15-20mg/L) for enterococcal endocarditis[5] or more resistant strains of MRSA	Confirm the level is a true pre-dose trough level taken at the correct time. **15-20mg/L** – reduce dose by 25-33% OR increase the dosing interval **>20mg/L** – omit the next dose then represcribe at half the dose OR double the original dosing interval	Confirm true pre-dose trough level **5-10mg/L** – increase dose by 50% or reduce dose interval **<5mg/L** – double the dose or halve the dose interval
Concurrent or sequential use of other potentially neurotoxic or nephrotoxic drugs such as Amphotericin B, colistin, other aminoglycosides, polymixin B, cisplatin, requires careful monitoring			

Infection	Antibiotic Choice/Recommended Duration	Comments
Genito-urinary		
Acute Lower UTI **Diagnosis** based on urine **dipstick** before treating as UTI. A **–ve leucocyte & nitrite** on dipstick has a **95% predictive value in excluding** a UTI.	Duration of treatment = 3 days **1st Line:** **Nitrofurantoin MR** 100 mg bd po **2nd Line:** **Trimethoprim** 200mg bd po or **Gentamicin** 2-3mg/ kg od iv as single agent treatment **If evidence of severe sepsis ADD** **Gentamicin** 5-7mg/kg iv STAT If further doses required monitor levels.	If Nitrofurantoin is contraindicated (eg. CrCl <60ml/min, porphyria,G6PD deficiency) use 2nd line agents. Discuss with microbiology if resistant isolates are cultured.
Catheter-related UTI	Asymptomatic Bacteriuria is common, and does not require any antibiotic. If symptomatic (fever/pyuria) **Gentamicin** 2-3mg/kg od iv x 3 days	When changing catheter in the presence of a UTI, give **Gentamicin** 2-3mg/kg iv STAT, 30 minutes before removal. If MRSA present in the urine **ADD** **Teicoplanin** 400mg iv STAT
Pyelonephritis	**Co-amoxiclav** 1.2g tds iv x 7-14 days depending on response **If evidence of severe sepsis ADD** **Gentamicin** 5-7mg/kg iv STAT If further doses are required levels need to be monitored.	Switch to oral therapy as soon as clinically indicated. If still pyrexial after 48hrs iv consider renal ultrasound. For **penicillin allergy** **Gentamicin** 2-3mg/kg iv od and contact microbiology to discuss alternative antibiotic.
UTI in Pregnancy	**Cephalexin** 500mg bd po x7 days	For **penicillin allergy,** contact microbiology
Acute Prostatitis	**Ciprofloxacin** 500mg bd po x 21 days	Contact urology
Acute Epididymo-orchitis	**Ceftriaxone** 1g im STAT + **Doxycycline** 100mg bd po x 10 days	**Severe Penicillin Allergy** **Ciprofloxacin** 500mg bd po + **Doxycycline** 100mg bd po Both antibiotics for 10 days
Pelvic Inflammatory Disease	Duration of treatment = 14 days **NON-PREGNANT** **Ceftriaxone** 2g od iv + **Metronidazole** 500mg tds iv + **Doxycycline** 100mg bd po **PREGNANT/BREAST-FEEDING** **Ceftriaxone** 2g od iv + **Erythromycin** 500mg bd po ± (ONLY if a clinically severe case add **Metronidazole** 500mg tds iv)	Switch to oral therapy when clinically improved, stopping the **Ceftriaxone** **Severe Penicillin Allergy** Discuss with microbiology

Respiratory		
Community acquired pneumonia **Diagnosis** based on **clinical** & **x-ray signs** of **consolidation** **Send sputum for m,c&s and urine for pneumococcal ag.** **Treatment** based on - **CURB-65 score each = 1 point** **C**onfusion **U**rea > 7mmol/L **R**espiratory rate ≥30 breaths/min **B**lood pressure systolic < 90 mmHg diastolic < 60 mmHg Age ≥ **65** Years	**Non-severe:** (CURB-65 = 0-2) **Amoxicillin** 1g tds po + **Clarithromycin** 500mg bd po **Severe:** (CURB-65 = 3-5) **Benzyl Penicillin** 1.2g qds iv (switch to oral **Amoxicillin** 1g tds po when clinically indicated) + **Clarithromycin** 500mg bd po/iv **OR** If **severe** & known COPD/Chronic lung disease/Previous course of amoxicillin **Co-amoxiclav** 1.2g tds iv + **Clarithromycin** 500mg bd po/iv Duration of therapy 5-10 days depending on severity and response. 14 days treatment is required for pneumonia caused by *Legionella*, *Mycoplasma* or *Chlamydia*	**PENICILLIN ALLERGY** **Non-severe: (**CURB-65=0-2) **Clarithromycin** 500mg bd po **Severe:** (CURB-65 = 3-5) **Vancomycin** iv (for dose see chart) + **Clarithromycin** 500mg bd po/iv **Discuss with microbiology** **If CURB-65 of 4-5** Consider ITU **ALWAYS DOCUMENT SCORE IN PATIENT NOTES** Switch to oral therapy as soon as clinically indicated.
Aspiration pneumonia	**Add Metronidazole** 500mg tds iv (or 400mg tds po if oral therapy appropriate)	Treat only if evidence of aspiration.
Hospital acquired pneumonia **CHECK ANY PREVIOUS MICROBIOLOGY RESULTS**	**Tazocin** (**Piperacillin** + **tazobactam**) 4.5g tds iv x 5-7 days depending on severity & response If previous or current **MRSA** in sputum ADD **Vancomycin** iv (for dose see chart)	**PENICILLIN ALLERGY** Discuss with microbiology If previously colonised with resistant organisms OR received recent course of antibiotics Discuss with microbiology
COPD–antibiotics only indicated for acute infective exacerbation with history of ↑ sputum purulence	**1st line:** **Doxycycline** x5days. 200mg po stat then 100mg daily po for the remaining 4 days **2nd line:** **Amoxicillin** 500mg tds po x 5 days	If **Penicillin allergic** **Clarithromycin** 500mg bd po x5 days
Infective Endocarditis		
Native&Prosthetic valve	Take 3 separate sets of blood cultures before starting any antibiotics	Discuss with microbiology

Central nervous System		
Meningitis of suspected bacterial aetiology **Send CSF, blood cultures, urine for pneumococcal antigen, EDTA blood for PCR, throat swab**	**Ceftriaxone** 2g bd iv + Dexamethasone** 10mg 6hrly iv for 4days ****to be given before or with the first dose of antibiotic** If pregnant, elderly or immune compromised ADD **Amoxicillin** 2g 4hrly iv Treatment 5-21days depending on organism.	**ISOLATE** patient and inform **CCDC** of clinical case ASAP If **Severe Penicillin Allergy** Contact microbiology urgently AND Start with **Vancomycin** 1g iv bd + **Chloramphenicol** 12.5mg/kg 6hrly (max 4g per day) (contraindicated in pregnancy)
Suspected viral encephalitis	**Add Acyclovir** 10mg/kg 8hrly iv x14-21 days	
Soft Tissue & Musculoskeletal		
Cellulitis FOR ALL SEVERE SPREADING CELLULITIS GET URGENT SURGICAL CONSULT Draw demarcation lines around the area of initial cellulitis Take pus swab and blood cultures if patient pyrexial	**Non-severe:** **Amoxicillin** 500mg tds po + **Flucloxacillin** 500mg qds po **Severe:** **Flucloxacillin** 1g qds iv + **Benzyl Penicillin** 1.2g qds iv + If suspect necrotising fasciitis/rapidly spreading cellulitis **ADD Clindamycin** 1.2g qds iv If **severe** cellulitis/necrotising fasciitis of groin/scrotal region (Fournier's gangrene) **Tazocin** (**Piperacillin + tazobactam**) 4.5g tds iv Duration of treatment is 7-14 days depending on response	**If known to be colonised or previous MRSA infection** **Non-severe:** Discuss with microbiology for possible oral options **Severe:** **Vancomycin** iv (for dose see chart) ±**Additional oral agent** – discuss with microbiology **PENICILLIN ALLERGY** **Non-severe:** **Clarithromycin** 500mg bd po x 7-14 days **Severe:** **Vancomycin** iv(for dose see chart) ± **Additional oral agent** – discuss with microbiology
Line-related infection (peripheral or central line) **REMOVE LINE (re-site if necessary)** **Peripheral lines** Take line-site swab. Take blood cultures if febrile. **Central lines** Take line site swab. Take blood cultures through the line AND peripherally. Send tip for culture when removed.	**Non-severe:** **Flucloxacillin** 1g qds po x 5-7 days **Severe:** **Flucloxacillin** 1-2g qds iv x 7-10 days If gram negatives suspected (ITU, tunnelled lines, immune suppression) **ADD Gentamicin** 5-7mg/kg od iv Gentamicin levels will need to be done according to guidance Duration of therapy = 5-7 days for non-severe And 7-10 days for severe infection	**If known to be colonised or previous MRSA infection** **Non-severe:** Discuss with microbiology for possible oral options **Severe:** **Vancomycin** iv (for dose see chart) ±**Additional oral agent** – discuss with microbiology **PENICILLIN ALLERGY** **Non-severe:** **Clarithromycin** 500mg bd po **Severe:** **Vancomycin** iv (for dose see chart) ±**Additional oral agent** – discuss with microbiology

Soft Tissue & Musculoskeletal		
Wound infection following clean injury or surgery **SURGICAL INTERVENTION IE DEBRIDEMENT AND/OR DRAINAGE ARE FIRST LINE TREATMENT**	**Non-severe:** **Flucloxacillin** 1g qds po **Severe:** **Flucloxacillin** 1g qds iv + **Benzyl Penicillin** 1.2g qds iv Duration of therapy 7-10 days depending on clinical response.	**If known to be colonised or previous MRSA infection** **Non-severe:** Discuss with microbiology **Severe:** **Vancomycin** iv (for dose see chart) ±**Additional oral agent** – discuss with microbiology **PENICILLIN ALLERGY** **Non-severe:** **Clarithromycin** 500mg bd po **Severe:** **Vancomycin** iv (for dose see chart) ±**Additional oral agent** – discuss with microbiology
Wound infection following contaminated surgery **SURGICAL INTERVENTION IS FIRST LINE TREATMENT**	**Non-severe:** **Co-amoxiclav** 625mg tds po x 7 days **Severe:** **Co-amoxiclav** 1.2g tds iv x 7-10 days **If evidence of sepsis** **ADD Gentamicin** 5-7mg/kg iv STAT If further doses are required levels need to be monitored.	**If known to be colonised or previous MRSA infection** **Non-severe:** Discuss with microbiology **Severe:** **Vancomycin** iv (for dose see chart) ±**Additional oral agent** – discuss with microbiology **PENICILLIN ALLERGY** Discuss with microbiology **If evidence of sepsis** **ADD Gentamicin** 5-7mg/kg iv STAT
Septic Arthritis Send aspirate to micro lab for URGENT gram stain	**Flucloxacillin** 2g qds iv x 2-3 weeks Duration of therapy = 2-4 weeks. Oral switch dose of flucloxacillin is 1g qds po	**PENICILLIN ALLERGY** **Non-severe penicillin allergy** **Ceftriaxone** 2g od iv **Severe penicillin allergy** **Clindamycin** 450mg qds iv Oral switch dose of **Clindamycin** is 450mg qds po
Acute Osteomyelitis Take blood cultures before starting treatment Try get bone sample before starting antibiotics	**Flucloxacillin** 2g qds iv + **Fucidin** 500mg tds po Duration of therapy = 4-6 weeks. Minimum of 2 weeks iv. Oral switch dose of flucloxacillin is 1g qds po Discuss with microbiology	**If known to be colonised or previous MRSA infection** **Vancomycin** iv (for dose see chart) + **Additional oral agent** – discuss with microbiology **PENICILLIN ALLERGY** **Clindamycin** 450mg qds iv + **Fucidin** 500mg tds po

Soft Tissue & Musculoskeletal		
Chronic Osteomyelitis Take blood cultures and try get bone sample	**Discuss with microbiology before starting any treatment**	
Diabetic foot ulcers with infection **Treat exposed bone as osteomyelitis**	**Antibiotics to be used only if demarcated cellulitis and/or systemic infection** **If limb-threatening:discuss with Diabetic team, Surgeons and microbiology**	Bacteria will almost always be present. Antibiotics may not improve healing. **Biopsies may provide valuable information**
Bites	**Co-amoxiclav 625mg tds po** Duration of treatment is 5 days Tetanus prophylaxis may be indicated Consider discussing with virology regarding blood borne viruses (BBV) in human bites and regarding rabies if suspected in animal bites	If **Penicillin Allergic** **Animal Bite:** **Doxycycline** 100mg bd po + **Metronidazole** 400mg tds po **Human Bite:** **Clarithromycin** 500mg bd po + **Metronidazole** 400mg tds po For pregnant women discuss with microbiology
Gastrointestinal		
***Clostridium difficile* diarrhoea**	**1st line:** **Metronidazole** 400mg tds po x 7-10days **2nd line:** (if no response to 7 days of Metronidazole) **ORAL Vancomycin** 125mg qds x7 days **Severe Colitis** **ORAL Vancomycin**250mg qds po x14 days **Recurrence/Relapse:** **Vancomycin** 125mg qds po x 14 days **Followed by a tapering course:** **Vancomycin** 125mg tds x 7days, then, **Vancomycin** 125mg bd x 7 days, then **Vancomycin** 125mg od x 7 days **Vancomycin** 125mg every other day x 7 days	If **severe disease**, discuss with **microbiology** and **surgical** team urgently. Patient must be **isolated** appropriately – discuss with infection control If unable to take orally, discuss with microbiology
Cholangitis and other non post operative gut sepsis	**Tazocin** (**Piperacillin + tazobactam**) 4.5g tds iv x 7-10 days If evidence of severe sepsis **ADD Gentamicin** 5-7mg/kg iv STAT. If further doses are required levels need to be monitored.	If **Penicillin Allergic** Discuss with Microbiology
Post-operative sepsis	**Tazocin** (**Piperacillin + tazobactam**) 4.5g tds iv for 7-10 days depending on response. + **Gentamicin** 5-7mg/kg iv STAT. If further doses required levels need to be monitored	**For Penicillin allergy** Discuss with microbiology

Gastrointestinal		
Spontaneous Bacterial Peritonitis	**Tazocin** (**Piperacillin** + **tazobactam**) 4.5g tds iv . x 10 days	**Non-severe Penicillin Allergy** **Ceftriaxone** 2g od iv **Severe Penicillin Allergy** Discuss with Microbiology
Necrotising Pancreatitis	**Imipenem** 1g tds iv x 14 days	If **severe Penicillin Allergy** Discuss with Microbiology
Neutropaenic Sepsis		
Neutropaenic sepsis (neutrophils<$0.5x10^9$/l) Discuss with Microbiology and Haematology / Oncology	**1st line:** **Tazocin** (**Piperacillin** + **tazobactam**) 4.5g tds iv + **Gentamicin** 5-7mg/kg iv od If lines are possible source **ADD** **Vancomycin** iv (dose according to guideline and levels) **2nd line:** If still pyrexial after 48 hours with no positive results, change to **Imipenem** 1g 8hrly iv + **Vancomycin** iv (dose according to guideline and levels) **3rd line:** If still pyrexial after 48 hours on 2nd line antibiotics and no positive cultures **ADD AmBisome®** 3-5mg/kg od iv (given 30 minutes after test dose of 1mg given over 10 minutes to exclude allergy)	**For Penicillin allergy** **1st line:** **Imipenem** 1g 8hourly iv + **Gentamicin** 5-7mg/kg iv od If lines are possible source **ADD** **Vancomycin** 1 g bd iv (dose according to guideline and levels) Discuss with microbiology