MicroGuidance (Hospital Adult) When male and female are stated within this policy, it refers to sex assigned at birth

Antibiotic 'rules' of thumb are broad generalisations which can be used before sensitivity results are available. dictable

Practice points	Before you call MICRObio	loav	• Gram negative 'coliforms' (eg E. coli, Klebsiella, Enterobacter, Proteus) &
 Sensitivity testing of the causative organism is important for deep or invasive infections and/or those not responding to treatment. Please send relevant samples – especially blood cultures wherever possible BEFORE antibiotics are given. Check to see if the patient has a previous positive ALERT organism like an ESBL, MRSA, CPE, VRE etc. This may influence your initial empiric treatment. Some microorganisms are difficult to isolate and methods such as 16S rDNA PCR (for bacteria) and/or 18S rDNA PCR (for fungal species) may be required. Therapeutic drug monitoring is required for gentamicin & vancomycin (refer to protocol, click here to access) Check to see if patients have travelled abroad – especially recently (within 12 weeks): they may be at risk of different infections or infections with different resistance patterns to local patterns – especially if they had hospital treatment outide Scotland. Patient not improving? Check: correct antibiotic(s), dose, and route. Have you got source control or is there an abscess, deep infection, medical device with biofilm or new infection or selection out of resistant strains? Some antibiotics are restricted e.g. meropenem (refer to protocol, click knere) Antimicrobial Susceptibility Testing Reporting of antibiotic susceptibility is changing in line with EUCAST recommendations. Antibiotics will be reported as '1' as well as the more familiar 'S' and 	before you can intervolue for advice please have the following details to hand: Main complaint & history; current & reca antibiotic history Initial assessment & Investigations; rad samples to determine infection focus CRP, WCC; results & trends Renal function; allergy Observations (NEWS, SEPSIS 6, CUR Link for Hospital Antibiotic Guidance Link for Antibiotic website You must contact Public Health and Infection Prev Control for certain infections the list is here: Link for Microbiology Handbook All positive blood cultures are phoned to medical s need to contact laboratory – when we know – you Think about placement (single room?), your perso protective equipment (PPE) for patients with rash, cough, diarrhoea.	ent iology, B65 etc) ention & staff: no do! nal fever, <u>col</u>	 Pseudomonas aeruginosa are usually sensitive to gentamicin. Amoxicillin only covers 50% of <i>E. coli</i>: when you stop gentamicin you might not have good coliform cover. Check sensitivities. Co-trimoxazole covers about 79% of <i>E coli</i>. Extended Spectrum Beta Lactamases (ESBL) are resistant to most penicillins (including co-amoxiclav, piperacillin-tazobactam & aztreonam. Temocillin, pivmecillinam (& meropenem) usually have cover for ESBLs. Temocillin & ertapenem do not cover pseudomonas. Pip-tazobactam, co-amoxiclav (& meropenem) have anaerobic cover so metronidazole is not needed. Temocillin & aztreonam have no anaerobic or gram positive cover Carbapenem - resistant enterobacterales (CRE) are resistant to penicillins, cephalosporins, pip-tazobactam, temocillin, carbapenems & often other classes of antibiotics – aztreonam, gentamicin, ciprofloxacin, co-trimoxazole. Early detection (screening/single room of those having healthcare from outside Scotland & screening patients from other Scottish hospitals), strict adherence to standard & transmission based infection prevention and control precautions & prudent prescribing including of meropenem must be in place to reduce impact of spread of these virtually untreatable bacteria. Anaerobes are generally sensitive to metronidazole (and co-amoxiclav, clindamycin, pip-tazobactam & meropenem) Gram positives like <i>Staph aureus</i> (MSSA, MRSA), streps & enterococci are sensitive to vancomycin (except VREs): use restricted to penicillin allergy or penicillin resistant to all beta-lactams (penicillins, flucloxacillin, pip-tazobactam, cephalosporins & meropenem) VRE are resistant to all beta-lactams (penicillins, flucloxacillin, pip-tazobactam, cephalosporins & meropenem)
'R. CENTRAL NERVOUS SYSTEM Meningitis refer to protocol, click here to access Meningitis: pneumococcus, meningococcus & if ≥60 years: Listeria Encephalitis: herpes simplex Send blood cultures, throat swab (bacterial transport medium)/viral throat swab (viral transport medium), EDTA for hacterial PCR and CSE where safe to do so		Antibiotic rules Pneumococci & meningococci are usually sensitive to penicillin Ceftriaxone is chosen because of the need for high CSF levels to be maintained & the ease of dosing (twice a day). provides better cover for the rare strain that may have borderline sensitivity to penicillin Listeria is resistant to cephalosporins but sensitive to amoxicillin: high dose & frequent dosing (4 hourly) needed for high CSF levels. Amoxicillin is used instead of Ampicillin for this indication in Tayside. Hences simpley is sensitive to IV sensitive to amoxicilate.	
ENT Epigloititis: Haemophilus influenzae, streptococci Tonsilitis: Group A streptococci Sinusitis: pneumococcus Acute otitis media: pneumococcus, Haemophilus influenzae See ENT specialist guidelines refer to protocol, click here to access		Artitiotic rules Attitotic rules Attitotic rules All beta-haemolytic streptococci [groups A B C & G] are usually sensitive to penicillin Pneurococci & meningococci are usually sensitive to penicillin but armox has better absorption when given orally Most (77%) Haemophilus influenzee are sensitive to moxicillin (not penicillin). Commonest resistance is beta- lactamase production. Life threatening illnesses like epiglotitits are therefore treated with ceftriaxone for high tissue levels, ease of dosing and better empiric cover for those that are armoxicillin resistant Most (97%) Haemophilus influenzee are sensitive to doxycycline. It is well absorbed & distributed. 87% of pneumococci are sensitive to doxycycline	
LUNG CAP refer to protocol, click here to access CAP feifer to protocol, click here to access CAP define to protocol, click here to access CAP feifer to protocol, click here to access CAP steps CAP steps CAP steps CAP steps CAP steps Cas refer to protocol, click here to access CAP steps CAP steps CAP steps Cas refer to protocol, click here to access CAP steps CAP steps CAP steps Protocol click CAP steps Cas refer to protocol, click here to access Coviella ; Remember Staph aureus pneumonia post influenza and the PVL producing strains of Staph aureus that can produce severe pneumonia in children and young adults especially please contact micro/make clear on form to add extra tests for this Acute exacerbation of COPD: pneumococcus, Haemophilus influenzae HAP: pneumococcus, Haemophilus influenzae and coliforms. Legionella can be hospital acquired. Send blood cultures, clotted blood for atypical bacteria (acute & convalescent), throat swab in viral transport medium. sputum for bacterial culture, BAL or tracheal aspirates as indicated clinically (suitable for PCR for Legionella and PCR for PCP i in duced sputum cannot be done), urine (white topped steri		 Antibiotic rules Most (6%) Haemophilus influenzae are sensitive to amoxicillin (not penicillin). Commonest resistance is beta- lactamase production. Pneumococci are usually sensitive to penicillin but amoxicillin has better absorption when given orally Most (6%) Haemophilus influenzae are sensitive to doxycycline. It is well absorbed & distributed 81% of pneumococci are sensitive to doxycycline Comoxiclar provides cover for most Haemophilus influenzae & coliforms for those with severe infection (not ESB or CPEs though) Devycycline is used for atypical cover (not used for Legionella) Lefolforacin (use restricted to severe CAP protocol) has good cover against MSSA, Haemophilus influenzae, pneumococci, coliforms & legionella Clantromycin has atypical cover but doxycycline is preferred 	
ENDCCARDITIS refer to protocol, click here to access Native valve acute : Staph aureus: take 2 sets blood cultures & start antibiotic within the hour Native valve subacute : viridans streptococci, enterococci :3 sets blood cultures 6 hours apart if patient stable Prosthetic valve, MRSA (resistant to flucloxacillin and all beta lactams); coagulase negative staphylococci CVC RELATED INFECTION Samples: Send blood cultures taken from peripheral site & line using strict aseptic technique. Swab exit site if infected then commence antibiotics & other investigations. Consider removal of line and if so send tip.			Service of the set of
INTRA-ABDOMINAL INFECTION (not infectious diarrhoea such as E coli 0157, Campylobacter etc) Clostridioides difficile: refer to protocol, click here to access Peritonitis/billary tract sepsis/Intrabdominal: polymicrobial coliforms, anaerobes & enterococci Spontaneous bacterial peritonitis: coliforms +/- anaerobes, sometimes Strep pneumonia: refer to protocol, click here Samples: Send blood cultures, pus or other intra-abdominal samples as appropriate Special notes for E coli 0157/STX 1/2 Click here for HPS resources • Notify Health Protection & Infection Prevention and Control on suspicion • Discuss children with bloody diarrhoea/HUS/confirmed 0157 with on call paediatric doctor. Discuss adults who are unwell with possible/confirmed HUS with Infectious Diseases • HUS is more common in under 5s and over 65s. Most develop 6-8 days post onset of symptoms- unlikely after >14 days • It is more common in those with bloody diarrhoea or who are unwell Faces for culture & reference laboratory tests Hamatology; FBC, film for fragmented blood cells for suspected HUS or confirmed 0157 Biochemistry: U&E, LDH. (CPR for baseline assessment		 Antibiotic rules Anaerobes are generally sensitive to metronidazole Coliforms are generally sensitive to gentamicin and most to aztreonam Only 47% of <i>E</i> coliⁱ are sensitive to amoxicillin; when you stop gentamicin you may not have adequate Gram negative cover Wost Enterococci are sensitive to amoxicillin but testing is required 65% of <i>E</i> coliⁱ are sensitive to ac-trimoxazole, but testing is required: Enterococci may be sensitive to co-trimoxazole, but testing is required: they rarely cause infection without coliforms ESBLs are resistant to most periicillins & cephalosporins including aztreonam, co-amoxiclav & pip-tazobactam Most ESBLs are sensitive/intermediate to temocillin (& meropenem available on infection specialist advice only) 	
URINARY TRACT Female uncomplicated lower UTI: coliforms, enterococci Male (no canheter): coliforms, enterococci Complicated infections such as pyelonephritis, urosepsis: coliforms, <i>Pseudomonas aeruginosa</i> , enterococci Samples: Send blood cultures and urine for culture if complicated infection, or male. Uncomplicated UTIs in females do not always require urine culture unless recurrent infection. DO NOT send catheter urine samples unless you oonsider this to be a source of infection and the patient thas signs or symptoms of infection. They will nearly always yield bacteria, treatment does not improve outcome & may lead to side effects (& <i>C difficile</i>). <u>Click here</u> for guidance on catheter		Antibiotic rule: Only 50' Coliform 79% of 1 uncomp Nitrofura anything Fostomy agents of	So of E coli are sensitive to amoxicillin is are generally sensitive to gentamicin and most to aztreonam E coli are sensitive to trimethoprim (which can be used as a single agent rather than co-trimoxazole in licated UTI) antion has no kidney tissue penetration & is not excreted in urine in renal impairment. So not used for other than uncomplicated lower UTIs in females & males coin can be used for oral treatment of ESBLs where pivmecillinam, co-trimoxazole, nitrofurantoin or other an't be used. <u>Refer to protocol. click here to access</u> .
SKIN & SOFT TISSUE refer to protocol, click here to access Celluitis: Staph aureus, group A & other beta-haemolytic streptococci Diabetic foot acute: Staph aureus Diabetic foot acute: Staph aureus Diabetic foot acute: Staph aureus Diabetic foot acute on chronic polymicrobial: Staph aureus, coliforms & anaerobes Advice on wound care can be accessed here. <u>Refer to protocol. click here to access</u> . Samples: If severe or systemic infection take blood cultures. Swab wounds having removed superficial debris. Flora on surface of wound may be different to that causing infection. Wound swabs cannot distinguish between infection and colonisation. Previous exposure to antibiotics may select out coliforms and Pseudomonas in particular. Colonisation does not need or respond to antibiotic treatment.		Antibiotic rule: • Flucloxa streptoc • Doxycyc • Co-trimo • Co-trimo • Conside	s cillin will cover beta-haemolytic streptococci (A C &G); so penicillin is not required in addition. Group B occi are NOT reliably treated with flucloxacillin fline will cover most <i>Staph aureus</i> (including MRSA) & beta-haemolytic streptococci xazole will cover 67% of colforms xazole will cover 98% of <i>Staph aureus</i> (including MRSA) r MRSA cover if patient is known to be positive until sensitivity results are back
SEPTIC ARTHRITIS/OSTEOMYELITIS refer to protocol, click here to access Staph aureus Send blood cultures (before antibiotics where possible), joint aspirates/washouts & bone samples. Consider any distant foci of infection		Antibiotic rules Flucloxa streptoc Need hig joint and	s cillin will cover beta-haemolytic streptococci (A C &G); so penicillin is not required in addition. Group B occi are NOT reliably treated with flucloxacillin ph doses (iv), prolonged duration (4-6 weeks), bactericidal (killing rather than slowing growth) to penetrate t tissue, eliminate bacteraemia & reduce risk of septic emboli
Developed by: Microbiology Approved by AMG: March 2014 Updated: Feb 2024 Review: Feb 2027 Amoxicillin + gent	: Infection Source Unknown: take blood cultures and amicin + metronidazole (consider flucloxacillin/vancomyci	other samples and if staphylococo	as appropriate al infection suspected e.g. PWID) Penicillin allergic: vancomycin + gentamicin + metronidazole