

Empirical Antibiotic Therapy in Children

A guideline is intended to assist healthcare professionals in the choice of disease-specific treatments.

Clinical judgement should be exercised on the applicability of any guideline, influenced by individual patient characteristics. Clinicians should be mindful of the potential for harmful polypharmacy and increased susceptibility to adverse drug reactions in patients with multiple morbidities or frailty.

If, after discussion with the patient or carer, there are good reasons for not following a guideline, it is good practice to record these and communicate them to others involved in the care of the patient.

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Empirical Antibiotic Therapy in Children: NHS Highland

This policy is intended to guide medical staff in NHS Highland on the choice of appropriate antibiotic treatment of infections in children.

The initial treatment may need to be modified according to clinical response and results of microbiology and other investigations. The appropriate specimens for microbiology should be taken whenever possible before administering Antibiotics, however this will depend upon the severity of the illness and the nature of the specimen. In patients who are stable and not septic, and in whom infection is only one of a number of possibilities, consideration should be given to deferring antibiotics until the results of cultures are known, as long as there is no change in the clinical condition in the interim.

The need for antibiotics and their route of administration should be reviewed daily.
A definite decision regarding treatment should be taken at 2 and 5 days. When clinically reasonable, consider changing from IV to oral therapy.
Doses of antibiotics are as recommended in the children's BNF.

If SEPSIS suspected - initiate the SEPSIS 6 PROTOCOL

CNS Infection	Immunocompromised patient	Septicaemia of unknown origin	Upper respiratory tract	Lower respiratory tract	Gastro-intestinal	Urinary tract	Bone / joint infection	Skin / soft tissue
<p>Bacterial meningitis</p> <p>Always refer to senior staff</p> <p>Under 6 weeks IV Cefotaxime^s + IV Amoxicillin + IV Gentamicin Steroids are not of proven benefit in this age group</p> <p>6 weeks to 3 months IV Cefotaxime^s + IV Amoxicillin Steroids are not of proven benefit in this age group</p> <p>Over 3 months IV Cefotaxime^s Add Dexamethasone for 4 days if bacterial meningitis without purpura</p> <p>If true penicillin allergy: contact ID or microbiology for advice</p> <p>Duration: on advice from ID or microbiology</p> <p>After 48 hours if child is >3 months and unlikely to require HDU/ITU care then consider switching from Cefotaxime to Ceftriaxone^s</p> <p>If decreased conscious level/seizures consider acyclovir</p>	<p>Immunocompromised plus sepsis</p> <p>See NHS Highland febrile neutropaenia in children guideline</p> <p>IV Piperacillin / Tazobactam + IV Gentamicin</p> <p>If staphylococcal infection (e.g. line related sepsis or soft tissue infection) suspected ADD IV Vancomycin</p> <p>If true penicillin allergy: IV Vancomycin + IV Gentamicin</p> <p>N.B. If haematology / oncology patient discuss with appropriate specialist and/or seek microbiology or ID advice.</p> <p>Duration: on advice from ID or microbiology</p> <p>Toxic Shock Syndrome (TSS)</p> <p>IV Meropenem + IV Clindamycin</p> <p>If true penicillin allergy: Discuss urgently with ID or microbiology.</p> <p>Consider IV immunoglobulin and discuss with critical care team</p> <p>Inform public health if concern about invasive group A strep infection</p> <p>Duration: on advice from ID or microbiology</p>	<p>Neonate - Community acquired</p> <p>Early onset <72 hours of age IV Benzylpenicillin + IV Gentamicin</p> <p>Late onset >72 hours of age IV Cefotaxime^s + IV Amoxicillin + IV Gentamicin</p> <p>1 month and above - Community acquired</p> <p>IV Cefotaxime^s +/- IV Gentamicin if severe*</p> <p>If meningitis cannot be excluded consider adding IV Amoxicillin for <i>Listeria</i> cover up to 3 months of age as per meningitis guideline</p> <p>1 month and above - hospital acquired</p> <p>IV Piperacillin/Tazobactam + IV Gentamicin</p> <p>If true penicillin allergy: consult ID or microbiology for advice</p> <p>Duration: on advice from ID or microbiology</p>	<p>Tonsillitis (if antibiotic required)</p> <p>Oral Penicillin V (IV Benzylpenicillin if unable to swallow) NB if unable to tolerate/refusing pen V, and low suspicion of Infectious Mononucleosis/EBV, otitis media/sinusitis in pen allergy, consider use of cefuroxime^s If true penicillin allergy: IV or Oral Clarithromycin** Duration 5 days</p> <p>Pertussis</p> <p>Under 1 month & over: Oral Clarithromycin** (7 days) Over 1 month: Oral Azithromycin** (3 days)</p> <p>Otitis media/sinusitis</p> <p>Children with acute otitis media should not be routinely prescribed antibiotics. Consider delayed antibiotic treatment.</p> <p>Oral Amoxicillin True penicillin allergy: Oral Clarithromycin** (note clarithromycin may have reduced activity against <i>S. Pneumoniae</i> & <i>H influenzae</i>, therefore consider use of cefuroxime if allergy history uncertain and no history of anaphylaxis) Duration 5 days</p> <p>Acute mastoiditis /severe sinusitis</p> <p>IV Ceftriaxone^s + IV Metronidazole Switching to oral Co-amoxiclav when stable If true penicillin allergy: IV Clindamycin^s and IV Gentamicin switching to oral clindamycin</p> <p>Epiglottitis</p> <p>IV Ceftriaxone^s</p>	<p>Non severe community acquired pneumonia (CAP)</p> <p>Under 5 years <i>S.pneumoniae</i> the likely pathogen Oral Amoxicillin Duration 7 days</p> <p>IV Amoxicillin may be used if oral route compromised</p> <p>or if true penicillin allergy: Oral Azithromycin** Duration 3 days</p> <p>5 years and above or mycoplasma or chlamydia likely pathogen Oral Azithromycin** Duration 3 days</p> <p>Severe (CAP)</p> <p>Please send sputum/blood cultures where possible IV Cefuroxime^s If septic consider adding IV Gentamicin</p> <p>Aspiration pneumonia</p> <p>IV Amoxicillin If true penicillin allergy: IV Clindamycin^s</p> <p>Pneumonia complication influenza</p> <p>IV Co-amoxiclav If true penicillin allergy: contact ID or microbiology for advice</p> <p>Hospital acquired Pneumonia</p> <p>Discuss with microbiology</p>	<p>Gastro-intestinal Intra-abdominal sepsis</p> <p>IV Cefuroxime^s + Metronidazole</p> <p>If true penicillin allergy: IV Clindamycin^s + IV Gentamicin</p> <p>Gastroenteritis</p> <p>No antibiotic usually required</p> <p>*Ceftriaxone in neonates see cautions / contraindications in BNF - an alternative is Cefotaxime If higher dose of Ceftriaxone is indicated in very severe infection see BNF dosing. #In child >3 months, change to ceftriaxone after 24 hours if stable.</p> <p>**Azithromycin / Clarithromycin have numerous serious drug interactions see BNF or contact pharmacy for details</p> <p>Review gentamicin requirements at 72 hours, follow guidelines for gentamicin level monitoring</p> <p>§:Denotes a protected antibiotic - see policy on intranet . The use of cefotaxime, ceftriaxone, cefuroxime and clindamycin should be discussed with microbiology within 24 hours of starting therapy and authorisation code obtained. If no duration stated, contact Microbiology for advice</p>	<p>Urinary Tract</p> <p>Upper Tract Infection (severely unwell), over 3 months. Defined by fever / systemic symptoms</p> <p>IV Ceftriaxone^s and consider adding IV Gentamicin</p> <p>If true penicillin allergy: consult Microbiology</p> <p>Duration 10 days</p> <p>Lower tract infection (non severe), over 3 months, symptoms confined to bladder.</p> <p>Uncomplicated: oral trimethoprim If risk of trimethoprim resistance: oral nitrofurantoin</p> <p>Duration 3 days, review at 48 hours</p> <p>NB Avoid trimethoprim if known previous resistant isolate, on trimethoprim prophylaxis or recent trimethoprim use</p> <p>Refer to detailed advice on TAM</p>	<p>Septic arthritis/osteomyelitis</p> <p>Neonatal osteomyelitis IV Cefotaxime^s</p> <p>5 years and younger IV Cefuroxime^s Switching to Oral Co-amoxiclav If penicillin allergy IV Clindamycin^s + Gentamicin</p> <p>6 years and above IV Flucloxacillin Switch to Oral Co-amoxiclav liquid or Flucloxacillin capsules</p> <p>Penicillin allergy: IV Clindamycin^s switching to oral Clindamycin^s</p> <p>If intolerant of first line therapy or incomplete HiB immunisation then use IV Co-amoxiclav</p>	<p>Cellulitis</p> <p>IV Flucloxacillin (high dose) If severe consider addition of clindamycin*^s Switch to oral flucloxacillin</p> <p>If penicillin allergy: IV Clindamycin^s Duration 7-10 days If severe sepsis or incomplete Hib immunisation ADD Gentamicin. Modify therapy according to culture results and clinical response.</p> <p>Orbital cellulitis / Peri-Orbital cellulitis</p> <p>Refer to ENT / Ophthalmology IV Cefotaxime^s + IV Flucloxacillin + IV Metronidazole (if no improvement after 24 hrs) Switch to oral-amoxiclav If penicillin allergy: IV Clindamycin^s + IV Gentamicin switching to oral clindamycin^s Duration 7-10 days</p> <p>Human / animal bite</p> <p>Oral Co-amoxiclav If true penicillin allergy: Human bite: Oral Metronidazole Oral Clarithromycin** Animal bite: Oral Metronidazole + Oral Co-trimoxazole</p> <p>Prophylactic antibiotics should be given to all moderate/severe bites especially if oedema, crush, puncture wounds, facial, genital, hand or foot bites or immuno-compromised hosts. Consider tetanus prophylaxis and for human bites, blood borne virus transmission. Consider rabies if animal bite acquired in endemic area. Duration 7 days</p>

Review Antibiotic Therapy DAILY: Stop? Simplify? Switch?

RATIONALISE ANTIBIOTIC THERAPY - when microbiology results become available or clinical condition changes.
NB. Recommended doses are based on normal renal / liver function, see BNF for dose adjustments in renal / liver impairment.
FURTHER ADVICE - Can be obtained from a consultant microbiologist, consultant paediatrician, paediatric pharmacist or antimicrobial pharmacist.
Specialist Paediatric infectious diseases advice can be obtained by contacting on-call PID consultant at Queen Elizabeth Hospital, Glasgow.