Whittington Health NHS

Antibiotic Protocols for Children seen in General Paediatrics

Subject:	Antibiotic Protocols for Children seen in General Paediatrics
Policy Number	N/A
Ratified By:	Clinical Guidelines Committee (Original and March 2011) reviewed May 2012 and July 2014, minor update November 2014
Date Ratified:	March 2011, reviewed as above
Version:	6.1
Policy Executive Owner:	Divisional Director WCF
Designation of Author:	Dr G Armstrong, Consultant Paediatrician Dr M Kelsey, Consultant Microbiologist Maxine Phelops, Paediatric Pharmacist
Name of Assurance Committee:	As above
Date re-issued:	November 2014
Review Date:	3 years hence
Target Audience:	General Paediatrics, ED
Key Words:	Antibiotics, paediatrics

Version Control Sheet

Version	Date	Author	Status	Comment
4	March 2011	Dr G Armstrong, Consultant Paediatricians Dr M Kelsey, Consultant Microbiologist Ai-Nee Lim, Pharmacist		Replaced previous version
5	May 2012	Maxine Phelops, Paediatric Pharmacist		Gentamicin dosing adjusted
6	July 2014	Dr G Armstrong, Consultant Paediatricians Dr M Kelsey, Consultant Maxine Phelops, Paediatric Pharmacist Ai-Nee Lim, Pharmacist		Expanded use of ceftriaxone Clarified when to consider severe sepsis antibiotics.
6.1	Nov 2014	Dr J Raine		Minor amendments to page 5 (Clinical Condition – Appendicitis) to ensure consistency with November 2014 update of the Trust Paediatric Appendicitis guideline

➢ Contents

➢ Background/ introduction & Criteria for use

1. This Guideline covers antibiotic treatment for paediatric patients from birth onwards.
2. It does not cover neonates who have not yet been discharged from hospital after birth. Antibiotic treatment recommendations for these neonates are provided in the Neonatal antibiotic policy.
3. Additional guidance on managing the conditions listed below can be found in the relevant guideline of that condition.
4. Most childhood infections (about 90%) are viral and hence may not benefit from antibiotics.
5. Before you start antibiotics appropriate cultures should be taken (e.g. blood, throat or skin cultures. If you suspect a UTI try to obtain 2 samples prior to treatment).
6. Consider the antibiotics safety and drug interactions. Use the BNFc or a paediatric drug formulary to look up side effects. Unnecessary courses of antibiotics help promote drug resistance.
7. The main contraindication to ceftriaxone is clinical jaundice. If a child with clinical jaundice, would normally receive ceftriaxone, and there is no alterntative listed in the guideline below, discuss the case with the on-call microbiology team.
8. Consider any history of allergy to an antibiotic. **NB** penicillin sensitivity is over-reported. Take a history and then decide.

   Immediate Type Reaction: Urticaria, pruritis, angioedema, bronchospasm, facial swelling, hypotension, or arrhythmia

   Contra-indicated: All beta-lactam antibiotics including penicillins, cephalosporins, meropenem/imipenem and aztreonam.

   Non-Immediate Type Reaction: Delayed rash, nausea, vomiting

   Contra-indicated: All penicillins

   May be used with caution: Cephalosporins, meropenem/imipenem and aztreonam.
9. Topical preparations should be avoided. Except in ophthalmic infections the efficacy of topical preparations are inferior to systemic therapy for most skin infections.
10. We suggest you use the first line drugs outlined until culture and sensitivity results are known. It is good clinical practice to switch to appropriate but narrower spectrum agents when possible.
11. Always use generic names used in BNFc. It is generally cheaper and equally effective.
12. Neonates who are readmitted with suspected infection should receive parenteral antibiotics.
13. If a patient is a known MRSA carrier and develops any significant infection, then advice should be immediately obtained from the on-call microbiologist regarding additional antibiotic cover for these patients. This would normally include IV vancomycin.

➢ Inclusion/ exclusion criteria

Excludes – All children on the neonatal unit or special care baby unit

Clinical condition	**Appendicitis**		
Likely causative organisms	• *Coliforms* • *Enterocooci* • *Pseudomonas spp* • *Anaerobes*		
General Treatment Points	• See separate 'Paediatric Appendicitis' guideline on intranet • If child clinically stable, give IV antibiotics and re-assess if any deterioration • **All appendectomies require antibiotics at induction of anaesthesia (see Paediatric Appendicitis guideline)** • **If systemically unwell or signs of generalised peritonitis start antibiotics immediately** • Post-op antibiotic therapy is guided by findings at operation		
Recommended antibiotic			
Route			**Duration**
IV At induction	First line	**Co-Amoxiclav** up to 3 months – 30mg/kg BD > 3 months – 30mg/Kg TDS (max. 1.2g TDS)	Single dose only
	Penicillin allergic	**Clindamycin** 1 month to 12 years 10mg/kg qds >12 years 1.2g qds **+** **If systemically unwell or signs of peritonitis** **Gentamicin** 7mg/kg once daily	Single dose only
IV Post-op	Normal appendix (and clinically not septic)	**Stop Antibiotics**	–
	Inflamed appendix (not perforated)	**Continue Pre-op Antibiotics**	2 further doses
	Gangrenous or perforated appendix	**Continue Pre-op Antibiotics**	Total 5 days IV initially then may switch to oral when on fluid and solids

Clinical condition	Bites (Human or Animal)		
Likely causative organisms	• *Anaerobes* • *Staph aureus* • *Pasteurella* species		
General Treatment Points	• Always irrigate wound as thoroughly as possible • Most wounds will not require closure with glue etc and should be dressed but not closed • These should be reviewed at 48 hours by children's community nursing team to ensure healing well +/- dressing change • If the wound is large enough to require closure (i.e. gaping wound) & is likely to have a poor cosmetic outcome if left open then discuss with general surgeon (limb / torso) or plastic surgeon (hands / face) re possible GA debridement and primary closure		
Recommended antibiotic			
Route			**Duration**
PO	First Line	**Co-amoxiclav** < 1 year: 0.25ml/kg TDS (125/31susp) max 5ml 1 – 5 year: 5ml TDS (125/31 susp) >5 year: 5ml TDS (250/62.5 susp) >12 years 1 tablet (250/125) TDS	7 days
	Penicillin Allergic	**<12 years** **Clindamycin** 3-6mg/kg QDS **AND** **Ciprofloxacin** 10mg/kg BD >12 years **Doxycycline** >12 years: 200 mg OD on day 1, then 100 mg OD thereafter	7 days 7 days 7 days

Clinical condition	Cellulitis & Impetigo		
Likely causative organisms	• *S aureus* • *S pyogenes*		
General Treatment Points	• Most minor infections can be treated orally • If oral treatment fails and the child has no clinical evidence of systemic symptoms, then consider treating with ceftriaxone as ambulatory patient • If child is has clinical evidence of systemic symptoms then admit for IV ceftriaxone • Treatment is usually for 7 days subject to clinical review after 1 week • **Topical treatment is not recommended** • **If known MRSA carrier** - see point 12 in general treatment advice (page 2) • If the child is clinically jaundiced, start IV Co-amoxiclav. Check serum SBR and discuss with Microbiology • If the child has a recent history of sub-tropical travel, consider unusual infections and discuss with Microbiology		
Recommended antibiotic			
Route			**Duration**
PO	First Line	**Co-amoxiclav** < 1 year: 0.25ml/kg TDS (125/31susp) max 5ml 1 – 5 year: 5ml TDS (125/31 susp) >5 year: 5ml TDS (250/62.5 susp) >12 years 1 tablet (250/125) TDS	7-14 days
	Penicillin Allergic	**Azithromycin** >6 months: 10mg/kg OD	**3 days**
IV	Admission or Ambulatory	**Ceftriaxone** 50mg/kg once daily (max 2g daily) **NB** if child clinically jaundiced see note above	7-14 days
	Penicillin Allergic	**Clarithromycin** 1 month to 12 years:7.5mg/Kg BD >12 years: 500mg BD	7-14 days

Clinical condition	Conjunctivitis
Likely causative organisms	• *H influenzae* • *S pneumoniae* • Staph aureus • *Moraxella spp.* • Viruses
General Treatment Points	• This guidance is for non-neonatal conjunctivitis • For neonatal sticky eyes the following advice applies, but **see separate "Neonatal Sticky Eye" guideline for full advice** o Persistent sticky eyes in early infancy, without inflammation, suggest a congenital blockage of nasolacrimal ducts. **This does not require antibiotic therapy.** o Take a chlamydial swab in newborns if no response to antibiotic therapy or if associated chest signs & msc. ▪ Chlamydial conjunctivitis requires oral azithromycin 20mg/kg as single dose (Neonatal Formulary 6th edition) , no topical treatment is required. o If early neonatal onset and severe purulence consider gonococcus and do urgent gram stain. ▪ Gonococcal conjunctivitis requires iv (or im) ceftriaxone. ▪ Administer one dose (50 mg/kg up to a maximum dose of 125 mg). ▪ Avoid ceftriaxone in premature, acidotic or jaundiced neonates. ▪ Disseminated gonoccocal disease will require a longer course of treatment. o Saline eye drops should also be used regularly to keep the eyes clean.

Recommended antibiotic

Route			Duration
TOP	First Line	Chloramphenicol eye ointment 1%, 3-4 times a day)	Until symptoms resolve and for 2 further days
	Alternative	Chloramphenicol eye drops 0.5% QDS	Until symptoms resolve and for 2 further days

Clinical condition	**Encephalitis (excluding Meningo-encphalitis)** **Excludes children < 3months old**
Likely causative organisms	• **Herpes Simplex Virus** • *Mycoplasma spp* • *Other viruses* • *Any bacterial meningitis (see section below)*
General Treatment Points	• ***Clinical presentation of altered consciousness +/- fever +/- seizures.*** • ***If any evidence of co-existing meningism &/or the child is <3 months old, refer to meningitis & menigo-encphalitis section of this guideline*** • Always consider non-infective causes as well e.g. trauma, inter-cranial lesion, metabolic conditions • **If any evidence of raised Intra-Cranial Pressure do not perform LP acutely** • If no evidence of raised Intra-Cranial Pressure, then perform LP before starting treatment • Always take blood cultures + mycoplasma titres + Throat Swab + HSV & mycoplasma PCR samples before starting treatment (**NB** CSF will only be tested for mycoplasma if accompanied by a respiratory sample – NPA or throat swab) • Inform microbiology SpR that samples being sent for PCR +/- 16s ribosome for swift processing. • If neonatally acquired HSV, discuss with Microbiology for advice on duration of treatment.

Recommended antibiotic

Route			Duration
IV	First Line	*Ceftriaxone* 80mg/kg once daily (max 4g) If < 3 months 50mg/kg + Aciclovir < 3 months: 20mg/kg TDS 3 months – 12 years: 500mg/m^2 TDS >12 years: 10mg/kg TDS + **Clarithromycin** 1 month to 12 years:7.5mg/Kg BD > 12 years: 500mg BD	Until culture results available Then as per meningitis guideline if positive Until PCR result available Then discuss with Microbiology for advice on duration of treatment (consider long line) For total 10 days of macrolide treatment
	Cephlasporin Allergic	**Discuss with on-call microbiologist**	As Above
PO		*Azithromycin* >6 months: 10mg/kg OD	To complete 10 days treatment

Clinical condition	**Febrile Neutropenia**	
Likely causative organisms	• *Any infective organism*	
General Treatment Points	• Refer to the Pan-London Supportive care protocols for paediatric Haematology and Oncology. • Available on intranet at: Clinical Guidelines>Paediatrics Clinical Guidelines>Link to Medical Protocols • Full information is also available in hard copy in Doctor's Office on Ifor ward. • Consult with Microbiology or Haem Onc., SpR at shared care hospital or Paediatric Pharmacist for more specialised information. • **If known MRSA carrier** - see point 12 in general treatment advice (page 2)	
Recommended antibiotic		
Route		**Duration**
IV	**See Paediatric Oncology Supportive Care Protocol**	

Clinical condition	Kerion & Tinea capatis		
Likely causative organisms	• **Trichophyton tonsurans** • **Microsporum spp.**		
General Treatment Points	• ***Kerions are raised spongy lesions on the scalp caused by fungal scalp infections.*** • They are more commonly found in children of African or Afro-Caribbean origin. • There is frequently a large amount of pus & purulent discharge from the lesions and significant cervical lymphadenopathy **but unless the child is having high fevers or other clinical evidence of sepsis, there is rarely any secondary bacterial infection.** Antibacterial agents (either oral or IV) are rarely needed. • Samples of plucked hairs (from the margin of the lesion) with the hair root intact +/- skin scrapings should be sent prior to starting treatment. • Topical treatment (although often initiated in the community) is inadequate for treating kerions and systemic treatment is always required.		
Recommended antibiotic			
Route			**Duration**
PO	First Line	*Itraconazole* Not recommended < 1 month 3-5mg/Kg (max 200mg) OD NB check medical contraindications in BNFc before prescribing	2 weeks
	Second Line	*Griseofulvin* 1month – 12 years – 20mg/Kg OD >12 years – Use Terbinafine (as below)	Until resolution of symptoms Usually give 6 weeks and then clinically review
	Third Line	*Terbinafine* Not recommended < 1 year (d/w micro if 2nd line required < 1 year) Body weight 10-20 Kg – 62.5 mg OD 20-40 Kg – 125 mg OD >40 kg – 250 mg OD	4 weeks

Clinical condition	**Meningitis / Meningo-encephalitis & Children <3 months old with fever with no focus**		
Likely causative organisms	• *Neisseria* meningitides • *Streptococcus pneumoniae* • *Haemophilus influenzae* type b (Hib) • *May include Herpes Simplex Virus in cases of meningo-encephalitis*	• *Group B streptococcus* • *Listeria monocytogenes* • *E coli & other gram negative organsisms*	
General Treatment Points	• See separate 'Bacterial Meningitis in Children' guideline on intranet>Link to Medical Protocols • If suspected or confirmed meningococcal septicaemia, see separate 'Early management of meningococcal disease in children' guideline on intranet. • Check Lumbar Puncture contraindication list in full guideline BEFORE doing LP on child. • Always do a throat swab and send blood cultures plus EDTA blood for PCR, preferably before starting antibiotics. • Ask for rapid antigen tests. Even if LP is contraindicated clinically, the antigens can be detected in blood and urine. • **If high clinical suspicion give Dexamethasone in children >2 months with first dose of antibiotics.** • **If disease is confirmed** - Cases must be notified to the Consultant for Communicable Disease Control (CCDC) (meningitis is a Statutorily Notifiable disease). • The CCDC must be contacted for advice on prophylaxis in close contacts, including staff members, see separate Meningitis-prophylaxis for contacts' guideline on intranet • **If known MRSA carrier** - see point 12 in general treatment advice (page 2) • **NB** Cefotaxime can be changed to Ceftriaxone in children < 3 months **if they are not jaundiced**		
Recommended antibiotic			
Route			**Duration**
IV	First Line + Dexamethasone (see above)	**<u>< 3 months</u>** **Cefotaxime** <7 days – 50mg/Kg BD ≥7 days – 50mg/Kg TDS + **Amoxicillin** up to 7 days – 100mg/kg BD >7 days – 100mg/kg TDS ≥ 1month – 50mg/kg every 4-6 hours (max. 2g every 4 hours) **<u>≥3months</u>** **Ceftriaxone -** 80mg/kg once daily (max 4g daily)	Until Culture results available
	Clinical suspicion of HSV infection	**Add Aciclovir** < 3 months: 20mg/kg TDS	Until PCR result available Then discuss with Microbiology

		3 months – 12 years: 500mg/m^2 TDS >12 years: 10mg/kg TDS	for advice on duration of treatment (consider long line)
	Cephlasporin or Penicillin Allergic	**Discuss with on call microbiologist**	Until Culture results available
	Culture results available	See advice on duration of treatment in full ‘Bacterial Meningitis in Children’ guideline.	

Clinical condition	Open Fractures		
Likely causative organisms	• ***Staphlococcus spp.*** • ***Enviromental organisms***		

General Treatment Points	• ***For small wounds that do not require surgical debridement &/or open reduction oral antibiotics are suitable***
	• ***Significant Lower Limb Open fractures***
	  • ***See British Orthopaedic Association (BOAST) guideline on "The management of Severe Open Lower Limb Fractures"***
	  • 1st dose antibiotics should be administered as soon as possible, **ideally within 3 hours of time of injury**
	  • Antibiotics are continued in the first instance until the patient has gone to theatre for full surgical debridement.
	  • If patient requires transfer to another hospital for definitive management – ensure antibiotics are given prior to transfer
	  • Need for antibiotic therapy post-op will be decided jointly by orthopaedics and microbiology.		

Recommended antibiotic			
Route			**Duration**
PO	First Line	Co-amoxiclav < 1 year: 0.25ml/kg TDS (125/31susp) max 5ml 1 – 5 year: 5ml TDS (125/31 susp) >5 year: 5ml TDS (250/62.5 susp) **>12 years 1 tablet (250/125) TDS**	5 days
	Penicillin Allergic	Clindamycin 1 month -12 years 6 mg/Kg QDS > 12 years 300 mg QDS	5 days
IV	First Line	Co-Amoxiclav up to 3 months – 30mg/kg BD > 3 month – 30mg/Kg TDS (max. 1.2g TDS)	Until definitive surgical debridement & wound closure Or for total 5 days (which ever occurs first)
	Penicillin Allergic	**Clindamycin** 1 month to 12 years 10mg/kg qds >12 years 1.2g qds	Until definitive surgical debridement & wound closure Or for total 5 days (which ever occurs first)

Clinical condition	Osteomyelitis		
Likely causative organisms	• *Staph aureus* • *H Influenzae* • *Strep penumo* • *Group A Strep* • *Salmonella spp (in sickle cell patients)* • *Kingella kingae*		
General Treatment Points	• Always discuss with Orthopaedic team re: further management& imaging **before starting antibiotics** • If it is possible to take samples from infected site (e.g. aspiration of sub periosteal collection) do so before starting antibiotics. • **Always take blood cultures before starting antibiotics** • Discuss with Microbiology regarding the addition of fusidic acid. • Treatment can be modified subsequently based on culture results. • Initial treatment is always IV for first 14 days – **consider insertion of long line at start of treatment** • For suspected osteomyelitis in sickle cell patients - see separate paediatric sickle cell guideline • **If known MRSA carrier** - see point 12 in general treatment advice (page 2)		
Recommended antibiotic			
Route			**Duration**
IV	First Line	**Ceftriaxone** 80mg/kg once daily (max 4g daily)	14 days
	Penicillin Allergic	**Clindamycin** 1 month to 12 years 10mg/kg qds >12 years 1.2g qds	14 days
PO	Step-down from IV	Discuss with microbiology with culture results	2-4 weeks

Clinical condition	**Otitis Media**		
Likely causative organisms	• Viruses • *Strep pneumoniae* • *Haem influenzae* • *Moraxella catarrhalis*		
General Treatment Points	• Red ears are often caused by viral infections • Especially when they are bilaterally inflamed and in conjunction with inflamed tonsils.		
Recommended antibiotic			
Route			**Duration**
PO	First Line	**Consider NO antibiotics as first line treatment**	
	Second Line	Co-amoxiclav < 1 year: 0.25ml/kg TDS (125/31susp) max 5ml 1 – 5 year: 5ml TDS (125/31 susp) >5 year: 5ml TDS (250/62.5 susp) >12 years 1 tablet (250/125) TDS	7 days
	Penicillin Allergic	*Azithromycin* **>6 months: 10mg/kg OD**	3 days

Clinical condition	Petichael Rash & Fever		
Likely causative organisms	• **Neisseria meningitides** • *Streptococcun pneumoniae* • *Staphylococcus aureus* • *Viruses*		
General Treatment Points	• ***See Whittington Hospital Guideline on 'Bacterial Meningitis and Petichael Rashes in Children' for full advice.*** **>**Link to Medical Protocols • Based on NICE guideline 102 'Bacterial meningitis and meningococcal septicaemia' • **All children with fever and non-blanching petichael rash are treated with antibiotics** • Only a consultant paediatrician can over-rule this. • **If there is evidence of shock, spreading purpuric rash or septicaemia refer to Whittington Hospital guideline 'Early management of meningococcal disease in children'** • If there is evidence of meningitis also see Whittington Hospital Guideline on 'Bacterial Meningitis and Petichael Rashes in Children' for full advice. • **Always take blood cultures (and other samples as per guideline) before starting antibiotics.** • If blood cultures negative at 48 hours and child clinically well antibiotics can be stopped. • **If known MRSA carrier** - see point 12 in general treatment advice (page 2)		
Recommended antibiotic			
Route			**Duration**
IV	First Line While admitted	Ceftriaxone 80mg/kg once daily (max 4g daily)	Until blood culture result available
	First Line - if <1 month or jaundiced	*Cefotaxime* 50mg/kg TDS	Until blood culture result available
	Cephlasporin Allergic	**Discuss with on-call Mircobiologist**	Until blood culture result available
	If well enough to manage ambulatory	Ceftriaxone 50mg/kg once daily (max 2g daily)	Until blood culture result available
IV	If Blood culture positive	Discuss with microbiology with culture results	Discuss with microbiology

Clinical condition	Pre-Septal Cellulitis & Orbital Cellulitis	
Likely causative organisms	Pre-Septal Cellulitis • *Strep pneumonia* • *Strep pyogenes* • *Staph aureus* • *H influenzae*	Orbital Cellulitis • *Staph aureus* • *Strep pneumonia* • *Group A Strep*
General Treatment Points	• These conditions must be aggressively treated. • **Treatment is IV to begin with** and should not be changed to oral until there is clear clinical improvement o Pre-septal cellulitis – eyelid cellulitis but normal eye movements & no proptosis i.e. no orbital involvement o Orbital cellulitis – abnormal eye movements +/- proptosis +/- optic nerve involvement • If clinically orbital cellulitis OR cannot exclude orbital cellulitis on clinical examination then needs CT orbits • True orbital cellulitis normally requires surgical treatment and should be discussed with the appropriate team.	

Recommended antibiotic

Route				Duration	
				Pre-Septal	**Orbital**
IV	First Line	**Ceftriaxone** 80mg/kg once daily (max 2g daily)		7 days	14 days and review
	Cephlasporin Allergic	**Discuss with on-call Mircobiologist**		7 days	14 days and review
PO Only when clinically improving	First Line	**Co-amoxiclav** < 1 year: 0.25ml/kg TDS (125/31susp) max 5ml 1 – 5 year: 5ml TDS (125/31 susp) >5 year: 5ml TDS (250/62.5 susp) >12 years 1 tablet (250/125) TDS		To complete total 7 days treatment	To complete total 14 days treatment and review
	Penicillin Allergic	**Pre-septal Cellulitis** **Azithromycin** >6 months: 10mg/kg OD **.**	**Orbital Cellulitis** Discuss with microbiology with culture results	To complete total 5 days treatment (if cultures negative)	To complete total 14 days treatment and review

Clinical condition	**Pneumonia**		
Likely causative organisms	• *S pneumoniae* • H influenzae • *Mycoplasma pneumoniae* (clinically - cough, chest pain, wheeze +/- arthralgia or headache)	• *Chlamydia* • Viruses	
General Treatment Points	• Children less than 2 years old – most commonly viral • Children less than 5 years old – most commonly S pneumoniae , rarely mycoplasma • Children older than 5 years old – most commonly S pneumoniae, but mycoplasma infection also occurs • If clinically pneumonia, no oxygen requirement, not in respiratory distress & not clinically septic:- o Do not need to do CXR & can be treated with PO antibiotics • If oxygen requirement, respiratory distress or clinically septic:- o Admit for IV antibiotics & do CXR o **If evidence of effusion on CXR discuss with paediatric consultant** • Step down to oral antibiotics when clinically improving		
Recommended antibiotic			
Route			**Duration**
PO	First Line	**Amoxicillin** < 1month - 30 mg/Kg TDS 1 month -1 year 125 mg TDS 1-5 years 250 mg TDS >5 years 500 mg TDS	7 days
	If > 5 years & clinically Mycoplasma infection	**Amoxicillin** 500 mg TDS **+** *Azithromycin* **10mg/kg OD**	7 days 5 days
	Penicillin Allergic	*Azithromycin* >6 months: 10mg/kg OD	5 days
IV	First Line In children < 5 years old	Co-Amoxiclav up to 3 months – 30mg/kg BD > 3 month – 30mg/Kg TDS (max. 1.2g TDS)	7 days
	First Line In children > 5 years old	Co-Amoxiclav (Dose as above) + **Clarithromycin**	7 days

		1 month to 12 years:7.5mg/Kg BD >12 years: 500mg BD	
	Penicillin Allergic	Ceftriaxone 50mg/kg once daily (max 2g daily) **+ Clarithromycin**	7 days

Clinical condition	**Severe Sepsis of Unknown Origin (in children >3 months old)** **(NB excludes children with meningitis / meningo-ecphalitis & < 3 months old))**
Likely causative organisms	• *Neisseria meningitidis* • *E coli* and other coliforms • *S pneumoniae* • *Group B streptococcal infections*
General Treatment Points	• ***Severe sepsis treatment is indicated when a child with evidence of any bacterial infection shows signs of cardiovascular compromise, sufficient to warrant treatment including (but not limited to) >1x 20ml/Kg fluid boluses, inotropes, transfer to PICU.*** • Always inform the on-call paediatric consultant if treating a child with presumed bacterial sepsis • The antibiotic guidance in this section is intended **only for cases where there is no clear primary focus of infection.** • For patients with a clear primary focus, please see the relevant section of this guideline, for the appropriate IV antibiotics of choice. • ***If suspected meningitis see separate 'Bacterial Meningitis in Children' guideline on intranet & meningitis section of this guideline. DO NOT use antibiotics below, treat as per meningitis guidance*** • If suspected or confirmed meningococcal septicaemia, see separate 'Early management of meningococcal disease in children' guideline on intranet. • Always take blood cultures before starting antibiotics. • **If the child has signs of sepsis related shock and might require calcium infusions then do not use ceftriaxone as it can precipitate out if it is co-administered with iv calcium.** • Once the need for calcium infusions has passed the child can be converted to OD ceftriaxone and managed as an ambulatory patient if otherwise clinically well. • **If known MRSA carrier** - see point 12 in general treatment advice (page 4)

Recommended antibiotic			
Route			**Duration**
IV	First Line	Meropenem <7 days 40 mg/kg BD >7 days 40 mg/kg TDS 1month -12 years & <50 Kg 20 mg/kg TDS 1 month -12 years & >50 Kg 1g TDS >12 years 1g TDS NB in absence of renal impairment, consider increasing to QDS (D/W Microbiology first)	Until blood culture result available
	Penicillin Allergic	**Ciprofloxacin** **< 1 month 10 mg/kg BD** **>1 month 10 mg/kg TDS (max 400 mg)** **+** **Gentamicin 7 mg/kg od** **+** **Discuss with on-call Microbiologist**	Until blood culture result available
IV	If Blood culture positive	Discuss with microbiology with culture results	Discuss with microbiology

Clinical condition	Septic Arthritis		
Likely causative organisms	• *Staph aureus* • *H influenzae* • *S. pyogenes* • *N. gonorrhoea* • *Kingella kingae*		
General Treatment Points	• Always discuss with Orthopaedic team re: further management& imaging **before starting antibiotics** • **Always take blood cultures +/- arrange aspiration of joint before starting antibiotics** • Discuss with Microbiology re fresh plating of joint aspirate samples +/- 16s testing. • Treatment can be modified subsequently based on culture results. • Initial treatment is always IV for first 7 days – **consider insertion of long line at start of treatment** • For suspected septic arthritis in sickle cell patients - see separate paediatric sickle cell guideline • **If known MRSA carrier** - see point 12 in general treatment advice (page 2)		
Recommended antibiotic			
Route			**Duration**
IV	First Line	Ceftriaxone 80mg/kg once daily (max 4g daily)	7 days
	Penicillin Allergic	**Clindamycin** 1 month to 12 years 10mg/kg qds >12 years 1.2g qds	7 days
PO	Step-down from IV	Discuss with microbiology with culture results	2-6 weeks

<table>
<tr><td>Clinical condition</td><td colspan="3">Tonsillitis / Pharyngitis/Quinsy</td></tr>
<tr><td>Likely causative organisms</td><td colspan="3">• Viruses
• Group A streptococci</td></tr>
<tr><td>General Treatment Points</td><td colspan="3">• Most sore throats are viral in origin
• Pus on tonsils does not distinguish between viral and bacterial infection
• Infection under 2 years of age is almost always viral
• Always take a throat swab before starting antibiotics.
• Consider delayed prescribing for uncomplicated tonsillitis (i.e. advise parents not to start antibiotics for 72hrs and if no longer symptomatic at 72 hours don’t need to start treatment)
Although Amoxicillin has a higher oral bio-availability than Pen V, children with EBV infection (who cannot be distinguished clinically from children with bacterial infections) can develop an EBV-amoxicillin rash) so Pen V is the first drug of choice, unless there are clear indications this is a bacterial infection e.g. known positive household contact.
• If clinical signs of a quinsy, always initiate treatment with IV antibiotics as below and contact on call ENT team.</td></tr>
<tr><td colspan="4">Recommended antibiotic</td></tr>
<tr><td>Route</td><td colspan="2"></td><td>Duration</td></tr>
<tr><td rowspan="3">PO</td><td>First Line</td><td>Consider NO antibiotics
as first line treatment</td><td>N/A</td></tr>
<tr><td>Second Line</td><td>Penicillin V
<1 month – d/w paeds consultant
1 month -1year 62.5 mg QDS
1 year - 6 years 125 mg QDS
6-12 years 250 mg QDS
>12 years 500 mg QDS
NB If there is a more than one member of a household infected, then can use PO Amoxicillin as an alternative (dose as per BNFc)</td><td>10 days</td></tr>
<tr><td>Penicillin Allergic</td><td>Azithromycin
>6 months: 10mg/kg OD</td><td>5 days</td></tr>
<tr><td rowspan="2">IV</td><td>First Line</td><td>Co-Amoxiclav
up to 3 months – 30mg/kg BD
> 3 month – 30mg/Kg TDS (max. 1.2g TDS)</td><td>IV until improves
Total 10 days treatment</td></tr>
<tr><td>Penicillin Allergic</td><td>Ceftriaxone
50mg/kg once daily (max 2g daily)</td><td>IV until improves
Total 10 days treatment</td></tr>
</table>

Clinical condition	**Urinary Tract Infections**		
Likely causative organisms	• Coliforms		

General Treatment Points	• See NICE guideline 'UTI in children' (especially for follow up required)
	• Always obtain specimens (clean and fresh as possible) before treatment commences:
	  o Either 2x separate clean catch samples
	  o Or 1x Catheter Specimen (CSU) or Supra-Pubic Aspirate (SPA)
	• If urine dipstick show an absence of nitrites and leucocytes, UTI is very unlikely.
	• IV therapy is indicated for:
	  o Patients less than 6 months of age,
	  o Those unable to tolerate or absorb oral medication,
	  o Those with known renal structure abnormalities
	• If the child is clinically jaundiced, start IV Co-amoxiclav. Check serum SBR and discuss with Microbiology
	• **If clinical signs of severe sepsis (as per severe sepsis section above) always initiate treatment with Meropenem**		

Recommended antibiotic			
Route			**Duration**
PO	First Line	Co-amoxiclav < 1 year: 0.25ml/kg TDS (125/31susp) max 5ml 1 – 5 year: 5ml TDS (125/31 susp) >5 year: 5ml TDS (250/62.5 susp) >12 years 1 tablet (250/125) TDS	7 days
	Penicillin Allergic	Ciprofloxacin **10mg/kg BD**	7 days
IV	Admission or Ambulatory	Ceftriaxone **50mg/kg once daily (max 2g daily)** **NB** if child clinically jaundiced see note above If not improving after 48 hours discuss with Microbiology to consider	7 days total treatment

		changing from ceftriaxone to: Meropenem <7 days 40 mg/kg BD >7 days 40 mg/kg TDS 1month -12 years & <50 Kg 20 mg/kg TDS 1 month -12 years & >50 Kg 1g TDS >12 years 1g TDS	
IV	**Severe Sepsis** (for definition see section above)	Meropenem <7 days 40 mg/kg BD >7 days 40 mg/kg TDS 1month -12 years & <50 Kg 20 mg/kg TDS 1 month -12 years & >50 Kg 1g TDS >12 years 1g TDS	
PO	Prophylaxis	Trimethoprim 2mg/kg nocte (max 100mg nocte)	Ongoing

- **Contacts (inside and outside the Trust including out-of-hours contacts)**

  - On-call Microbiology SpR – contact via switchboard

- **Compliance with this guideline (how and when the guideline will be monitored e.g. audit and which committee the results will be reported to) Please use the tool provided at the end of this template**

  - Inpatient paediatric antibiotic usage monitored at weekly paediatric grand round on Ifor ward.

To be completed and attached to any procedural document when submitted to the appropriate committee for consideration and approval

		Yes/No	Comments
1.	**Does the procedural document affect one group less or more favourably than another on the basis of:**		
	• Race	No	
	• Ethnic origins (including gypsies and travellers)	No	
	• Nationality	No	
	• Gender	No	
	• Culture	No	
	• Religion or belief	No	
	• Sexual orientation including lesbian, gay and bisexual people	No	
	• Age	No	
	• Disability - learning disabilities, physical disability, sensory impairment and mental health problems	No	
2.	**Is there any evidence that some groups are affected differently?**	No	
3.	**If you have identified potential discrimination, are any exceptions valid, legal and/or justifiable?**	No	
4.	**Is the impact of the procedural document likely to be negative?**	No	
5.	**If so can the impact be avoided?**	N/A	
6.	**What alternatives are there to achieving the procedural document without the impact?**	N/A	
7.	**Can we reduce the impact by taking different action?**	N/A	

If you have identified a potential discriminatory impact of this procedural document, please refer it to the Director of Human Resources, together with any suggestions as to the action required to avoid/reduce this impact.

For advice in respect of answering the above questions, please contact the Director of Human Resources.

Checklist for the Review and Approval of Procedural Document

To be completed and attached to any procedural document when submitted to the relevant committee for consideration and approval.

	Title of document being reviewed:	Yes/No	Comments
1.	**Title**		
	Is the title clear and unambiguous?	Yes	
	Is it clear whether the document is a guideline, policy, protocol or standard?	Yes	
2.	**Rationale**		
	Are reasons for development of the document stated?	Yes	
3.	**Development Process**		
	Is it clear that the relevant people/groups have been involved in the development of the document?	Yes	
	Are people involved in the development?	Yes	
	Is there evidence of consultation with stakeholders and users?	Yes	
4.	**Content**		
	Is the objective of the document clear?	Yes	
	Is the target population clear and unambiguous?	Yes	
	Are the intended outcomes described?	Yes	
5.	**Evidence Base**		
	Are key references cited in full?	N/A	
	Are supporting documents referenced?	N/A	
6.	**Approval**		
	Does the document identify which committee/ group will approve it?	Yes	
7.	**Dissemination and Implementation**		
	Is there an outline/plan to identify how this will be done?	Yes	
8.	**Document Control**		
	Does the document identify where it will be held?	Yes	
9.	**Process to Monitor Compliance and Effectiveness**		

	Title of document being reviewed:	Yes/No	Comments
	Are there measurable standards or KPIs to support the monitoring of compliance with and effectiveness of the document?	Yes	
	Is there a plan to review or audit compliance with the document?	Yes	
10.	**Review Date**		
	Is the review date identified?	Yes	
	Is the frequency of review identified? If so is it acceptable?	Yes	
11.	**Overall Responsibility for the Document**		
	Is it clear who will be responsible for co-ordinating the dissemination, implementation and review of the document?	Yes	

Executive Sponsor Approval			
If you approve the document, please sign and date it and forward to the author. Procedural documents will not be forwarded for ratification without Executive Sponsor Approval			
Name		Date	
Signature			
Relevant Committee Approval			
The Director of Nursing and Patient Experience's signature below confirms that this procedural document was ratified by the appropriate Governance Committee.			
Name		Date	
Signature			
Responsible Committee Approval – only applies to reviewed procedural documents with minor changes			
The Committee Chair's signature below confirms that this procedural document was ratified by the responsible Committee			
Name		Date	
Name of Committee		Name & role of Committee Chair	
Signature			

Tool to Develop Monitoring Arrangements for Policies and guidelines

What key element(s) need(s) monitoring as per local approved policy or guidance?	Who will lead on this aspect of monitoring? Name the lead and what is the role of the multidisciplinary team or others if any.	What tool will be used to monitor/check/observe/Asses s/inspect/ authenticate that everything is working according to this key element from the approved policy?	How often is the need to monitor each element? How often is the need complete a report ? How often is the need to share the report?	What committee will the completed report go to?
Element to be monitored	**Lead**	**Tool**	**Frequency**	**Reporting arrangements**
General adherence to correct antibiotic usage by paediatric & ED staff	Dr Kelsey, Consultant Microbiologist	Inpatient cases reviewed at weekly grand round on Ifor ward jointly between microbiology & paediatric consultants with pharmacy input	Not required	Not required