Antibiotics Why and Why Not 2018

Pediatric and Pregnancy Regimens and Lyme Disease

Acute pharyngitis – Pediatric regimen

Antibiotic	Pediatric Regimen (Acute pharyngitis)	Cost per kg per day
Penicillin V[1]	25-50 mg/kg/day divided TID or QID (maximum 3000 mg/day)	$0.03-0.09
Amoxicillin[2]	50 mg/kg/day divided once daily or BID (maximum 1000 mg/day)	$0.05
Cefprozil[3]	20 mg/kg/day divided BID (maximum 1000 mg/day)	$0.14
Cefuroxime[4]	20 mg/kg/day divided BID (maximum 1000 mg/day)	$0.15
Clarithromycin [5]	15 mg/kg/day divided BID (maximum 1000 mg/day)	$0.12
Duration of therapy is 10 days for all regimens		

[1] Penicillin V preferred 1st line (narrow spectrum, safe and low cost). No documented resistance to GAS.
[2] Amoxicillin broader spectrum than required, but option in children where palatable liquid preferred.
[3] 1st line option if patient **has NOT experienced a previous IgE mediated reaction** to amoxicillin.
[4] 1st line option if patient **has experienced an IgE mediated amoxicillin reaction.**
[5] Alternatives in patients unable to take β-lactams. Increased GAS resistance to clindamycin and macrolides. Concerns with adverse effects (e.g. *C. difficile* with clindamycin).

Acute Rhino-sinusitis - Pediatric regimen

Antibiotic	Pediatric Regimen (acute rhino-sinusitis)	Cost per kg per day
Amoxicillin	45-90 mg/kg/day Divided **TID** (maximum 3000 mg/day)	$0.10 - $0.19
Amox/Clav[1] 80mg/ml 7:1 formulation only	Amoxicillin 45-60 mg/kg/day divided TID	$0.19 - $0.25
Cefprozil[2]	15-30 mg/kg/day Divided Q12-24H (maximum 1000 mg/day)	$0.11- 0.21
Cefuroxime[3]	30 mg/kg/day Divided BID	$0.23
Clarithromycin[4]	15 mg/kg/day Divided BID (maximum 1000 mg/day)	$0.12
Duration of therapy is 10-14 days for all regimens		

[1]For fever > 39° or treatment failure with amoxicillin (symptoms not resolved after 3-5 days)
[2]1st line option if patient **has NOT experienced a previous IgE mediated reaction** to amoxicillin.
[3] 1st line option if patient **has experienced an IgE mediated amoxicillin reaction**.
[4] A macrolide is recommended if history is suggestive of a delayed, severe, non-IgE mediated hypersensitivity reaction to a β-lactam

Community acquired pneumonia – Pediatric regimen

Antibiotic	Pediatric (Age > 3 mon) Regimen (Outpatient CAP)	Cost per kg per day
Amoxicillin	45-90[1] mg/kg/day Divided **TID** (maximum 4000 mg/day)	$0.09 - 0.19
Cefprozil[2]	15-30 mg/kg/day Divided once daily to BID (maximum 1000 mg /day)	$0.11- 0.21
Clarithromycin[3]	15 mg/kg/day Divided BID (maximum 1000 mg/day)	$0.12
Duration of therapy is 7 to 10 days for all regimens		

[1] Use higher dose (75-90 mg/kg/day) if patient has any of the following risk factors for resistant *S. pneumonia:* Unimmunized or incompletely immunized; Daycare attendance; Use of antibiotics in the preceding 3 months; Failure of initial treatment.
[2] 1st line option if patient **has NOT experienced a previous IgE mediated reaction** to amoxicillin. Neither cefprozil nor clarithromycin cover *S pneumoniae* as well as amoxicillin and cefprozil does not cover *C. pneumoniae* and *M. pneumoniae*
[3] 1st line option for patients with IgE mediated penicillin allergy. A macrolide is also recommended if history is suggestive of a delayed, severe, non-IgE mediated hypersensitivity reaction to a β-lactam. (*S. pneumoniae* is increasingly becoming resistant to macrolides but they do cover *C. pneumoniae* and *M. pneumoniae*.)

References are available in the document at http://www.medicine.dal.ca/departments/core-units/cpd/programs/academic-detailing-service.html
Costs listed are wholesale costs in Nova Scotia accessed online from McKESSON Canada in October 2018.

Acute Otitis Media

Antibiotic	Pediatric Regimen (Acute otitis media)			Cost per kg per day
Amoxicillin[1]	45-60 mg/kg/day 75-90 mg/kg/day	Divided TID Divided BID	(maximum 3000 mg/day)	$0.10 $0.19
Amox/Clav[2] 80mg/ml 7:1 formulation	Amoxicillin 45-60 mg/kg/day divided **TID**			$0.19 - $0.25
Cefprozil[3]	30 mg/kg/day	Divided BID	(maximum 1000 mg/day)	$0.21
Cefuroxime[4]	30 mg/kg/day	Divided BID	(maximum 1000 mg/day)	$0.23
Clarithromycin[5]	15 mg/kg/day	Divided BID	(maximum 1000 mg/day)	$0.12
Ceftriaxone	50 mg/kg/day IM or IV once daily x 3 days (reserve for emergency			Cost varies
Duration of therapy: 5 days for children ≥ 2 years old 10 days for children < 2 years old; frequent recurrent AOM; perforation; or failed initially				

[1] For known or suspected drug-resistant S. *pneumoniae* (recent {< 3 months} exposure to antibiotics, attends day care or unimmunized or incompletely immunized) high dose amoxicillin should be considered: 80-90 mg/kg/day divided BID or TID; Max 4 gm/day.

[2] For patients who have failed therapy with amoxicillin (symptomatic after 2-3 days of treatment).

[3] 1st line option if patient **has NOT experienced a previous IgE mediated reaction** to amoxicillin.

[4] 1st line option if patient **has experienced an IgE mediated amoxicillin reaction.**

[5] A macrolide is recommended if history is suggestive of a delayed, severe, non-IgE mediated hypersensitivity reaction to a β- lactam.

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Acute uncomplicated cystitis (empiric outpatient therapy) – Pediatric regimen

Antibiotic	Pediatric (> 2 months) EMPIRIC Regimen (Acute uncomplicated cystitis)	Cost per kg per day
Cephalexin	50mg/kg/day divided QID (maximum 4000 mg/day)	$0.64
Cefixime[1]	8 mg/kg/day once daily (maximum 400mg/day)	$0.19
Amoxicillin[2]	50mg/kg/day divided TID (maximum 3000 mg/day)	$0.05
TMP/SMX[1]	8mg/kg/day divided BID Dose based on TMP component (maximum 160 mg TMP per single dose)	$0.20
Recommended duration of therapy 5 to 7 days		

[1] Option if history of penicillin allergy (IgE mediated)

[2] Only use empirically if *Enterococcus* suspected as there are high rate of resistance with *E. coli* and poor activity vs *Klebsiella*

Acute uncomplicated cystitis (empiric outpatient therapy) – Pregnant women

Antibiotic	Pregnant Women Regimen (Acute uncomplicated cystitis)	Cost per course
Cephalexin	500mg QID x 7 days	$12.60
Nitrofurantoin[1,3] Monohydrate/macrocrystals	100mg BID X 5 days **(DO NOT USE In Late 3rd Trimester)**	$7.86
Amoxicillin[2]	500mg TID x 7 days	$7.18
TMP/SMX[3]	1 DS tab BID x 3 days **(DO NOT USE in 1st OR 3rd trimester)**	$0.73

[1] Nitrofurantoin should not be used in patients with CrCl < 30 ml/min.

[2] Should not be used empirically as high resistance rates with *E.coli* and no activity against *Klebsiella.*

[3]Option for patients with penicillin allergy.

Skin and Soft Tissue Infection – Pediatric regimen

Impetigo in children

- A **topical antibiotic** is **preferred** for impetigo that is limited and localized (i.e. 2-3 small areas).
  - Mupirocin 2% (Bactroban) ointment applied TID (**$17/30g tube,** McKESSON)
  - Fusidic acid 2% (Fucidin) ointment applied TID-QID (**$24/30g tube,** McKESSON)
- Wash lesions with soap and water to help gently remove crusts
- Situations indicating the need for a different diagnosis and/or treatment (e.g. oral antibiotics) include:
  - Limited or localized infection unresponsive to topical antibiotic after 24-48 hours
  - Recurrent or widespread infection (numerous or large lesions)

Antibiotic	Pediatric Regimen (SSTI)	Cost per kg per day
Cephalexin[1]	50 mg/kg/day Divided QID Maximum 4000 mg/day	$0.57
TMP/SMX[4,5]	8-12mg/kg/day Divided BID Based on trimethoprim component	$0.20 – 0.30
Clindamycin[6]	20 mg/kg/day Divided TID Maximum 1800 mg/day	$0.27
Duration of therapy 5 days if mild and quick response, otherwise 7-10 days		

[1]1st line empiric therapy for GAS and MSSA

[4]1st line empiric therapy for Community acquired- methicillin resistant *S. aureus* (CA-MRSA) MSSA if penicillin allergy (IgE mediated) or severe non-IgE mediated reaction to penicillin

[5]Does not cover GAS

[6] 1st line empiric therapy for GAS if unable to take any β-lactam

Lyme Disease

- For further managing details, please refer to
  - The Nova Scotia statement https://novascotia.ca/dhw/cdpc/documents/statement_for_managing_LD.pdf
  - The Isaak Walton Killam Health Centre's Spectrum app http://www.spectrum.md/iwk/.

Guidelines for treatment of early localized Lyme disease (OFF LABEL USE)

ADULTS (IDSA)		
Manifestation	**Antibiotic**	**Cost per day**
Erythema migrans or early disseminated disease, including Bell's palsy, but **without** other CNS involvement	• Doxycycline 100 mg po BID x 14-21 days (contraindicated in pregnancy) • Amoxicillin 500 mg po TID x 14-21 days • For penicillin allergy Cefuroxime 500 mg po BID x 14-21 days	$1.17 $1.02 $2.86
CHILDREN 8 years and older (SPECTRUM)		
Early localized disease Cutaneous disease- Erythema migrans (single or multiple) only	• Doxycycline 4.4 mg/kg/day po divided BID x 10 days. Round dose to nearest 25 mg (1/4 tablet) (maximum 200 mg/day) For isolated facial palsy, give for 14 days	$0.59
CHILDREN less than 8 YEARS (SPECTRUM)		
Early localized disease Cutaneous disease- Erythema migrans (single or multiple) only	• Amoxicillin 50 mg/kg/day, po divided TID x 14 days (maximum 1500 mg/day) • For penicillin allergy Cefuroxime 30 mg/kg/day, po divided BID x 14 days (Maximum 1000 mg/day)	$0.05 $0.23

- In Nova Scotia, **antibiotic prophylaxis** is generally not recommended after a tick bite. It may be offered to individuals who meet all of the following criteria:
  - Attached tick reliably identified as *I. scapularis*
  - Tick is estimated to have been attached for > 36 hours on the basis of the degree of engorgement or by certainty about time of tick attachment
  - Prophylaxis can be started within 72 hours of tick removal
  - Local rate of *B. burgdorferi* infection in ticks is > 20% (Currently not reported in Nova Scotia)
  - Doxycycline is not contraindicated

Prophylaxis for Lyme Disease (CCDR 2014)

Antibiotic	**Prophylaxis adults and children ≥ 8 years Lyme Disease**	**Cost**
Doxycycline	Adults: 200 mg for 1 dose Children: 4.4 mg/kg maximum dose of 200 mg (Round dose to nearest 25 mg (1/4 tablet)	$0.59
Contraindicated in pregnancy and children < 8 years old		