

Patient Characteristics	Likely Pathogens	Recommended Empiric Antibiotics {Canadian-adapted from 1) 2005 Anti-infective Guideline ^{CND} 2) IDSA ²⁰⁰³ Update ^{Mandell} & 3) 2000 CIDS/CTS guidelines}		Specific Agents & Sample Adult Dosages	\$ per 10 d	Comments
OUTPATIENTS						
No modifying factors	♦Mycoplasma pneum. (not as prevalent in elderly) ♦Chlamydia pneumoniae ♦Strep. pneumoniae	1 st – Macrolide 2 nd - Doxycycline (Ketolide: may be option if Tx failures or DRSP)	♦Macrolide ^{or} Doxycycline If recent antibiotic Tx: ♦Respiratory FQ alone ♦Macrolide ^{new} & amox ^{†dose} or amox-clav ^{†dose}	Erythromycin base 250-500mg po qid Erythromycin PCE 333mg po tid ☒ Clarithromycin 500mg po bid 1g XL po od cc ☒ Azithromycin 500mg po Day 1 ; then 250mg po Days 2-5 *due to long t _{1/2} , 5 day tx ≈ 10d ☒ Telithromycin 800mg po od Doxycycline 100mg po bid ☒ Levofloxacin 500-750mg po od ☒ Gatifloxacin 400mg po od ☒ Moxifloxacin 400mg po od Amoxicillin 500-1000mg po tid ☒ Amox/clav 875-2000mg po bid ☒ Cefuroxime axetil 500mg po bid ☒ Cefprozil 500mg po bid	13-17 25 80 67 *42 ^{5d} 80 19 49-63 67 69 14-19 37-96 55 81	♦compared to erythromycin, newer macrolides more costly but better GI tolerance, od dosing & better H. influenzae coverage (but S. pneumonia resistance ^{~20%}) ♦5 day tx with azithromycin & 7 day tx with clarithromycin or FQs is adequate ^{6,7,8} ♦Doxycycline preferred over TCN due to better GI tolerance and bioavailability & BID (or OD) dosing; covers atypicals ♦Ciprofloxacin not recommended –poor Strep. coverage/treatment failures ♦Cephalosporins lack atypical coverage & show increasing pneumococcal resistance ♦Penicillin for Strep. pneumoniae if MIC ≤2 _{mg/L} ; amoxicillin preferred due to better bioavailability, longer t _{1/2} , ↓dosing frequency, & more favorable MICs ♦Telithromycin is an option if Tx failure or DRSP but has DI's, blurry vision & ↑\$.
Comorbidity – no recent antibiotics or oral steroids within past 3 months	Above plus: ♦H. influenzae ♦M. catarrhalis	1 st – New Macrolide (Ketolide: if Tx failures/DRSP; Doxycycline in 2000 CND)	Macrolide ^{new} ^{or} FQ ^{Resp.} Aspiration: Amox-clav or clindamycin			
Comorbidity – recent antibiotics or oral steroids within past 3 months	Above plus: ♦H.influ, βlactamase + ♦M. catarrhalis ♦Legionella pneumophila (rare in SK) ♦Gram -ve rods	-(Macrolide or Ketolide) + (Amox/clav or 2 nd G Ceph) {Ketolide: may be option if Tx failures or DRSP}	♦Respiratory FQ alone ♦Macrolide ^{new} & βlactam (amoxicillin ^{†dose} , amox-clav ^{†dose} , cefprozil ^{or} cefuroxime)			
Comorbidity may include: COPD, diabetes, malignancy, renal failure, heart failure, alcoholism, malnutrition, etc.						
Nursing home resident, outpatient management (if hospitalized, treat as below)	♦Strep. & C. pneumoniae ♦H. influenzae, S. aureus ♦Gram -ve rods ♦aspiration pneumonia	-(Macrolide or Ketolide) + (Amox/clav or 2 nd G Ceph) {Ketolide:if Tx failures/DRSP}	♦Respiratory FQ alone ^{or} Macrolide ^{new} & amox-clavulanate			
		–Respiratory FQ				
		–Respiratory FQ				
HOSPITALIZED INPATIENTS (initiation of antimicrobial therapy within 4hours associated with lower mortality) ¹⁰ (Pts in FINE risk class I-III may be treated as outpatients) ¹²						
General Ward admission	♦Strep. & M. pneumoniae ♦Chlamydia pneumoniae ♦H. influenzae ♦gram -ve ♦Legionella pneumophila	-(2 nd or 3 rd or 4 th G Ceph) + (Macrolide or Ketolide) {Ketolide:if Tx failures/DRSP}	♦Respiratory FQ alone (Macrolide ^{new} or doxy ^{Med Let}) & βlactam (cefotaxime, ceftriaxone, ertapenem; mero or imipenem ^{Med Let if resistance})	Gatifloxacin 400mg IV q24h Levofloxacin 500-750mg IV q24h Moxifloxacin 400mg IV q24h (or po fluoroquinolones as above) Cefuroxime 750mg IV q8h Cefotaxime 1g IV q8h Ceftriaxone 1g IV q24h Cefepime 1g IV q12h Erythromycin 500mg IV q6h Azithromycin 500mg IV q24h x5d Tazocin 3.375g IV q6h (or po as above)	350 350 350 (49-69) 100 225 350 320 500 110 700	♦Cdn CAP group favor monotherapy with FQs; US IDSA is concerned that misuse & overuse of FQs may ↑↑ resistance rates ♦choice of 2 nd , 3 rd , or 4 th gen cephalosporin dependent on local resistance ♦adjust doses for severity/renal function ♦penicillin 3MU IV q6h or ampicillin 1-2g IV q6h still OK for Strep. pneum if MIC≤2 _{mg/L} , but if MIC >2 _{mg/L} a FQ ^{Resp.} or vancomycin 1gm IV q12h or linezolid 600mg IV/PO q12h may be needed ⁶
ICU	Above plus: ♦Enteric gram – rods (eg. Klebsiella, Enterobacter, Serratia, Acinetobacter) ♦ ♦S. aureus	–3 rd G Ceph IV + Macrolide ^{or} –3 rd G Ceph IV + Respiratory FQ (Using βlactam/lactam Inh ^{or} the 3 rd G Ceph in CND ²⁰⁰⁰ guidelines) If beta-lactam allergy: Respiratory FQ + clindamycin	♦βlactam (cefotaxime, ceftriaxone, ertapenem; (pip/taz, mero or imipenem -in Med Let if resistance issues)) & Macrolide ^{new} ^{or} FQ ^{Resp.} (if severely ill +AMG ^{Med Let}) ♦ If βlactam allergy: Respiratory FQ +/- Clindamycin			
If antibiotic usage history in past 3 months, consider selecting antibiotic from different class.						
ICU, risk of Pseudomonas (Cystic Fibrosis, HIV, structural lung disease, bronchiectasis, recent stay in hospital esp. in the ICU)	Above plus: ♦Pseudomonas species	1 st – antiP FQ + antiP βlactam (+/- AMG) 2 nd – triple IV therapy: ♦antiP βlactam + Macrolide (or FQ) + AMG (dose/cost of other agents as above)	♦antiP βlactam + ciprofl. ♦antiP βlactam + AMG + (FQ ^{Resp.} ^{or} Macrolide) ♦ If βlactam allergy ^{Med Let} : ciprofloxacin & AMG & (clindamycin or vancomycin)	Ciprofloxacin 400mg IV q12h Ceftazidime 2g IV q12h (or 1-2g q8h) Imipenem 500mg IV q6h Meropenem 1gm IV q8-12h Gentamicin 3-7mg/kg IV q24h Tobramycin 3-7mg/kg IV q24h	660 250 999 975 ^{q12h} 50 90	♦Aminoglycoside cost based on 5mg/kg/d x70kg adult, normal renal fx; {lengthen dosing interval if elderly, ↓ renal fx, etc.} 5-7mg/kg if younger, normal CrCl 7mg/kg for more severe infection ♦Tobra better than gent for Pseudomonas
Aspiration Pneumonia	♦Oral anaerobes (dose/cost of other agents as above)	1 st – Amox/clav (+/- Macrolide) 2 nd – Clindamycin or {Metronidazole (+/- FQ)}	♦Amox-clavulanate or clindamycin or (metronidazole ^{Med Let})	Clindamycin 300mg po qid 600mg IV q8h Metronidazole 250mg po tid 500mg IV q12h	54 110 10 25	♦Moxifloxacin & gatifloxacin have anaerobic coverage (~monotherapy ^{2nd line}) ♦po bioavailability: metronidazole~100%; clindamycin~90%

☒ = EDS in Sask X = non-formulary in Sask ☒=prior approval for NIHB coverage ▼=covered by NIHB ⊗=not NIHB Cost= approximate \$ drug cost per 10 days unless noted otherwise noted ☒=↓ dose for renal dysfunction
Amox/clav= amoxicillin+clavulanate **CLAVULIN** AMG= aminoglycoside (tobramycin>gentamicin against Pseudomonas) **βlactam/lactam Inh (inhibitor)** = Amox/clavulanate (oral), piperacillin/tazobactam **TAZOCIN**
2ndG Ceph (cephalosporin)= cefuroxime **CEFTIN**, cefprozil **CEFZIL**; **3rdG Ceph**= cefotaxime **CLAFORAN**, ceftriaxone **ROCEPHIN**, cefixime **SUPRAX** (oral); **4thG Ceph**= cefepime **MAXIPIME**
Macrolide= erythromycin, clarithromycin **BIAXIN**, azithromycin **ZITHROMAX** **New macrolide**= clarithromycin, azithromycin **Ketolide**=Telithromycin **KETEK** **PRSP** = penicillin resistant S. pneumoniae (ie MIC ≥4mg/L).
Respiratory fluoroquinolones (FQ^{Resp.}) = gatifloxacin **TEQUIN**, levofloxacin **LEVAQUIN**, moxifloxacin **AVELOX** (NOT ciprofloxacin unless pseudomonas suspected); **TCN** = tetracycline **DRSP**=drug resistant S. pneumoniae
Antipseudomonal: antiP βlactam = imipenem **PRIMAXIN**, meropenem **MERREM**, ceftazidime **FORTAZ**, cefepime **MAXIPIME**, piperacillin/tazobactam **TAZOCIN**; antiP FQ = ciprofloxacin **CIPRO**
Dose –may need adjustment for severity of illness, renal function, etc. **Treatment duration** variable (typically 7-14 days or 4-5 days post-improvement; longer if complicated; 2-3 weeks treatment suggested for Legionella, also for C. pneumoniae & M. pneumoniae due to risk of relapse). **Pregnancy:** 'B' no evidence of risk (in animal studies or uncontrolled human studies) cephalosporins, penicillins, erythromycin, azithromycin, clindamycin & metronidazole.

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