Etiology of pneumonia and treatment choices

• Since the bacterial etiology of pneumonia differs by age somewhat, with Mycoplasma and Chlamydia pneumoniae playing a role for those >5 years of age, question 5 was hard to answer as written for outpatient and uncomplicated pneumonia. [South Atlantic]

• The question about duration of treatment for inpatient uncomplicated or complicated pneumonia may be problematic - I answered for total length of therapy, some may answer for length of IV/inpatient treatment. Sometimes we do nasal cultures for MRSA or non-susceptible pneumococcus, not that it proves what the etiology of the pneumonia is but to help guide empiric therapy based on the patient's known colonizing organisms. Linezolid wasn't a choice - we sometimes use for outpatient therapy if clindamycin resistance is proven. [West South Central]

• Where available, PCR testing for M. pneumoniae is helpful in guiding anti-microbial therapy. It is going to be difficult to interpret the answers to question #5 because empiric therapy is usually based upon age if treatment is to be considered - e.g. outpatient amox for <5 yo and azithromycin for >5 yo. [East North Central]

• You really want to distinguish pts by age. <1 year, I worry more about staph (and MRSA); under 5, I usually don't cover for mycoplasma. [East North Central]

• Some of these questions (and options) should be rewritten. No. 5: the choice of antibiotics is influenced by the age of the patient. I usually will not use azithromycin in a 1 year old, but I would for a 3 year old with outpatient or uncomplicated inpatient pneumonia. In some patients we elect to use ampicillin-sulbactam if there is a history of possible aspiration or suspicion of Lemierre's disease. Third-generation cephalosporins should not be grouped with 2nd generation (in my opinion). [East North Central]

• Therapy question difficult to answer as written. I target pneumococcus in younger children (say <5 years), and broaden coverage to cover atypical agents for older children. [Pacific]

• As outpatient very often I use azithromycin instead of amoxicillin but not primary therapy. [Pacific]

• Over treatment occurs in many cases. In previously healthy children we do not know if H. flu and M. cat are important pathogens that need treatment. Mycoplasma has very little morbidity. Therefore recommend that amoxicillin is the initial drug of choice. [Mountain]

• The assumption is that all CAP is bacterial when in fact most is not - so the questions are not worded to allow you to answer as you practice. My rule is name the bug to pick the drug - so if it is winter and viral pneumonia is likely that the drug is an anti-influenza or no antibiotic; if the patient is a coughing teen, then mycoplasma is likely and the drug is azithromycin or doxycycline. I think the results of this survey will not be as useful as questions which force us to name the pathogen before selecting therapy. In fact I think that is a major shortcoming of the adult guidelines - all pneumonia is treated as if bacterial. [MidAtlantic]

• Duration of therapy and other management issue questions are difficult to answer in this format as it will depend on nuances of severity of disease and complications. [MidAtlantic]
• Duration of therapy question is impossible to answer for complicated patients as it depends on many circumstances. The above answer given is highly qualified. Neither viral DFA nor viral PCR are currently available at my primary institution except on a send-out basis, rendering them virtually moot for clinical decision-making. [MidAtlantic]

• Not a very good or useful survey as it fails to account for immunization status, and lumps all the different age groups together. Teenagers are terrific candidates for doxycycline but could not list as an alternate since I would not use in younger children. Also, previous antibiotic exposure frequently affects '1st line' therapy, and represents a substantial number of our patients. [East North Central]

• I distinguish in empiric Rx by age and add azithromycin for first 1-2 mths (chlamydia) or >6 years (for Mycoplasma, Chlamyphila). Azithromycin is otherwise not indicated in kids w CAP < 6 years especially since 60% of pneumococci are resistant to ery anyway (some important local epi your survey neglected to ask). [West North Central]

• I believe, based on the collective data on pediatric pneumonia including some well-known review articles by Ken McIntosh and John Bradley, that empiric therapy for outpatient pneumonia should differ based on a child's age. This issue is not addressed by your questionnaire, which asks what physicians prefer for empiric therapy for children 1-18 years of age. For children 0-3 months of age and over 4 years of age, I often use azithromycin for empiric therapy of outpatient pneumonia (particularly in patients who do not have ill appearance, tachypnea, hypoxia or other signs suggesting a need for chest radiographs). For children 4 months of age up to 4 years of age, I generally use high-dose amoxicillin (80-90 mg/kg/day) TID for outpatients. I don't routinely do chest radiographs on outpatients, particularly those without ill appearance, hypoxia, tachypnea, chest pain, or signs of consolidation on exam such as egophony or signs of intrathoracic fluid such as increased tactile fremitus. The guidelines you are writing might also need to include language about three specific situations that are not always addressed well by CAP guidelines: aspiration pneumonia vs. aspiration pneumonitis and when those diagnoses should be considered, VAP/nosocomial pneumonia, when to consider M. tuberculosis pneumonia, and special considerations for immunocompromised children with pneumonia. [Pacific]

• CAP antibiotic rx and duration in the outpt setting is stratified by age and clinical features. [Pacific]

• We need rapid specific tests for M. pneumoniae, which is greatly underdiagnosed. Would result in more appropriate antibiotic use. [MidAtlantic]

• Treatment ranges vary so much by patient severity and response to therapy. Your ranges are very narrow. [South Atlantic]

• The answer to the question about the choice of primary antibiotic therapy would depend on whether the child received oral antibiotics prior to presentation. [East North Central]

• Approach to care to some extent needs to be individualized, depending on the CXR findings, the clinical symptoms/history, age of the patient, etc. This influences antibiotic selection, duration of therapy, etc. [Mountain]

• For the physicians that use ampicillin or amp/sulbactam in complicated pneumonias, I would have asked the dose that they use. [South Atlantic]

• Toxic inpatients often receive amp/sulb and vanc instead of amp/sulb and clinda, at least initially. [MidAtlantic]

Comments about the initial drainage procedure

• Interval for drainage of empyema is also too dependent on circumstances of the individual patient to pick from the list provided. [MidAtlantic]

• Question #7 is also difficult to answer because a complicated pneumonia could include an exudative pleural effusion, not an empyema, for which simple chest tube drainage may suffice but if it is truly an empyema the use of TPA may be required. [East North Central]
• No. 7b: chest tube should be AS SOON AS POSSIBLE. I did not understand question very well; a bit confusing options. [East North Central]
• Difficult to get VATS done in a timely fashion. Often wait till other measures fail. [South Atlantic]
• The surgical community is very divided on management of these patients and often we get inconsistent approaches depending on the surgeon on call. [South Atlantic]
• When to drain and if to drain a complicated pneumonia is a case by case decision. Some children are very sick and it is urgent to drain, others appear to settle down and respond to antibiotics and will clear ultimately with antibiotics. It is not possible to make a blanket statement except that if there is pus and respiratory distress best to drain and leave in a tube. The VATS is very helpful and is done if there is complex fluid collection seen on U/S. The U/S is better to give information about membranes in a collection. Also necrotizing pneumonias are cause of prolonged fever but respond to ceftriaxone as most are pneumococcus. The course of Staph aureus pneumonia is much more rapid than that of pneumococcal pneumonia almost always. Group A strep is like dealing with Staph. [East North Central]
• Each geographic area has unique characteristics. Our patients often come from over 100 miles and may have been referred for services available only with us-- tubes, Vats etc, hence the inability to define better timelines. [West South Central]
• I would have added the question of how many hospitals are doing pleuracentesis before deciding on drainage of pleural fluid. [South Atlantic]
• Although VATS is the procedure of choice here, I do not believe this is necessarily superior to chest tube + fibrinolytics. [East South Central]
• For hospitalized patients, etiol and rx of PNA w parapneumonic effusion is relatively similar whether 2 or 12 y/o. [Pacific]
• Our hospital is no longer doing VATS -- essentially all chest tube+TPA. [MidAtlantic]
• The cultures from the pleural fluid are hardly ever positive. We almost always get a negative culture. [Pacific]

Microbiologic diagnosis and resistance
• The vast majority of pneumonias are never etiologically diagnosed. [East North Central]
• We just isolated a Multiple Toxin Producing MSSA that was USA300, missing the mec conferring methicillin resistance. It had a cassette of multiple toxin genes, including PVL. Bacteremic for 4 days on nafcillin, a probable septic thrombophlebitis to explain that, but also had septic pulmonary emboli, osteomyelitis, septic arthritis and necrosed the femoral head. Bob Daum back in '03 published cases that were similar with PVL as the marker. I think we have a new problem on our hands. [East North Central]
• I am impressed with the increasing amounts of DRSpn that we are now seeing despite full vaccination histories, very likely 19A serotype by antibiogram resistance patterns. Also high prevalence of MRSA in our community, such that I ALWAYS advise asking the question of people with skin infections in exposure history, and if positive, proactively covering with clindamycin even in outpt settings. [West South Central]
• We have not seen an increase in S. aureus pneumonia despite the amount of MRSA isolates (including blood cultures). We are in the midst of the H1N1 with a lot of Peds admissions, a few classic viral pneumonia but no bacterial superinfections yet!! [South Atlantic]
• H1N1 & RSV significantly alter isolation & susceptibility to other bacterial secondary infections. [South Atlantic]
• Our hospital antibiogram does not distinguish inducible clindamycin resistance from constitutive resistance. It also does not allow for knowing what percentage of clindamycin resistant strains are also MRSA (or vice versa). [MidAtlantic]
• More MRSA in sicker pts seen, in 2008 than previous years, down a little in 2009, S. pneumo
becoming more pcn =s. [East North Central]
• Interested in use (if at all) of strep urinary antigen test in pediatric patients. In general, we don't use
as believe represents colonization. [West South Central]

**General comments and guidelines**
• Doing a case series on HUS related to S. pneumoniae does not add much to the existing literature.
The complication is well known among ID physicians and pediatric nephrologists. [East North
Central]
• The response 'No existing clinical pathway/guideline for CAP' applies to pediatric patients only. [East
North Central]
• I am very uncertain about the right answers even after years of "experience". I guess this is the reason for
the guidelines. At my hospital usually the initial Rx is given by others and I am called for specific
problems, unusual cultures or lab or x-ray results. Many types of MDs start initial meds, ER (+/- peds
training), night coverage, general peds attending, PICU attending, other pediatric subspecialists so
there is little uniformity and skewed experience by ID physicians. [East North Central]
• Better etiologic studies are urgently needed, as is a better way to share the results. The P-CAP guidelines
are dramatically overdue. Good luck. [Mountain]
• We need to have evidence-based guidelines which are up to date and widely accepted. [South Atlantic]
• This is very useful. Thank you. [MidAtlantic]
• Very important survey. Thank you. [MidAtlantic]

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