Infectious Diseases Society of America
Emerging Infections Network

Comments for Query:
‘Diagnostic Testing in Adults with Community-Acquired Pneumonia (CAP)’

Comments made by 85 respondents.

Comments about pneumococcal urine antigen test and/or blood cultures for CAP

• Our hospital lab says the pneumococcal antigen is not reliable so does not offer it
• Urinary antigen test is not useful
• Blood cultures are protocol for all admitted patients with CAP, and even most of those seen in the ER who are sent home. Would always use in our office. Recently, when working on CPOE order sets, and referring to UptoDate which advocates for urinary antigen, I inquired of our lab director about it. His response was 'no better than flipping a coin and since it is a send out, will take a week to receive results', so little utility for the cost. Occasionally gets ordered in cases of empyema of unknown origin, but no positives that I can recall.
• 6 respondents offered comments about positive blood cultures and negative pneumococcal urine antigen tests, e.g. “Pneumococcal urine antigen is very insensitive; we had a patient this week with pneumococcus in 4 bottles of blood and a negative urine antigen.”
• For pneumonia due to *S. pneumoniae* it is not as critical to have the antigen test because the response to beta-lactams is not so dependent upon susceptibility results (as it is in CSF), and the antigen test is not usually available in our institution any sooner than blood culture results.
• ER standard of care requires administration of Abx before most micro tests are available. Urinary antigen would only detect a small minority of patients with CAP and could not be turned around sufficiently quickly as to influence Abx choice. Could really use a quick, inexpensive bedside test to rapidly differentiate "classic" from atypical from viral pulmonary infection but see nothing on the horizon fulfilling these stringent requirements.
• Blood cultures are part of the CAP CMS core measures and are supposed to be done routinely. I use pneumococcal urinary antigen if it is a severe pneumonia in ICU and no diagnosis has been made. Come to think of it, I don't recall ever having seen a positive urinary antigen for pneumococcus. I don't routinely use it.
• We are in the VA and have a CAP performance measure for blood cultures. They are usually negative-but occasionally positive and in sick pts essential. We are trying to get experience with the pneumococcal ag; it takes a while to come back-which limits its usefulness.
• As a send out test, the antigen assays are of limited value. In-house diagnostic panels that included the rapid availability of antigen assays and viral pcr panels would be game changing. Of course - I would happily almost settle for a micro lab that could competently and quickly get me a quick gram stain.
• The pneumococcal urinary antigen test not readily available at our institution and if it were, not sure it would have much of an impact.
• Should be universally used, or not used, ie - in protocol. Right now the use seems haphazard and random rather than systematic.
• Pneumococcal urinary antigen should be done routinely in ERs
• Turnaround time remains problematic
• In my previous hospital, I used pneumococcal antigen routinely as the test was done in house. Currently, results are not usually available in time to affect care, therefore rarely ordered.
• I tend to obtain urine pneumococcal ag if patient was on antibiotics recently, or if delay in obtaining blood cultures due to difficulty with phlebotomy.
• Probably helpful in those patients who were exposed to antibiotics and therefore cultures including blood and sputum cultures are less sensitive.
• Only recently have I been using pneumococcal antigen. It is only rarely positive.
• Antigen almost never positive. Blood cultures positive mostly in immunosuppressed/AIDS patients
• Antigen testing has limited utility because of relatively low specificity (90%) and lack of evidence that tailoring therapy based on a + antigen test result leads to improved outcome - in fact the obverse is true
• Antigen testing is available if we really want it, but as a send-out.
• Urine antigen is a useful test when positive
• Since BCx not frequently (+) and sputum Cx often unreliable, having rapidly available reliable test results (i.e. urinary Ag, etc) would be very helpful
• With only 45 blood cultures positive (and all are for S. pneumoniae) this habit needs a study. I have not seen a positive culture (except for contaminant) in over a year
• Our VA has onsite pneumococcal urinary Ag available, but it's a send-out test at our med school teaching hospital. That is soon to change given the clinical demand for the test, the rationale being that we can narrow coverage and reduce C. difficile risk with reduced quinolone use in outpatients and inpatients with PCN allergies.
• Point of care urine testing would be much more useful than our current send out urine Ag testing. This is true for Legionella testing as well.
• Blood cultures, as it is, are positive in less than 50% of cases when collected before antibiotics are administered. Pneumococcal Urine Ag, in spite of being more sensitive, ends up not being helpful because of lack of local lab capabilities. When they come back the patients are gone and residents have switched to different floors. Lost opportunities for accurate diagnosis and reality check teaching.
• I never use pneumococcal urine antigen test; I feel it is worthless. I never see patients fast enough with CAP to make a decision on blood cultures.
• Without susceptibilities, the Ag doesn't really help me
• The blurred line between CAP, HAP, HCAP makes pneumococcal antigen testing more useful than previously

Comments about CAP order sets/when tests ordered
• Both tests are included in our preexisting computer order sets for CAP. Blood cultures are usually obtained in the ED as part of the guideline protocols. When the urinary antigen is not ordered, it is because the orders were entered in the computer without using the order set but by ordering the individual components.
• 9 physicians commented that blood cultures and pneumococcal urinary antigen testing are included in standard CAP order sets, e.g., “We have blood cultures and the pneumococcal urinary antigen test built into our order pathway for CAP - this helps a lot in making sure that the testing gets done when needed.”
• Promulgate a CAP "bundle": blood culture, O2, urine antigen, antibiotics (doxy + cfrtx), etc
• We removed the urine pneumococcal antigen from our pneumonia order set, though some physicians still order it
• We included these two tests on our pre-printed orders for CAP for hospitalists. We also added legionella urine antigen. it helped reminding people to order them
• I order the urine antigen for CAP in a pneumococcal compatible pattern

Other diagnostic tests (procalcitonin, legionella urinary antigen, sputum gram-stain & culture)

• I'm still a believer in sputum gram stain and culture, but that's the one least likely to be ordered or collected

• We have respiratory panel (NO swab) for viral and atypical bacterial PCRs which has been very helpful in hospitalized patients (very expensive for everyone). We usually send legionella urinary antigen, as well, if hospitalized. Pneumococcal urinary antigen test is being added now, however.

• Sputum for gram stain and culture, if +, is of course diagnostic. If expectorated sputum not available, I sometimes resort to NT suction.

• We are starting to use procalcitonin in various ways: diagnosis (vs CHF); response to Rx; length of Rx.

• Last summer, we had an outbreak of Legionnaire's diseases. Thank goodness we had Legionella pneumophila urinary antigen test centralized in our lab, so we could detect the outbreak early. But even with the test available, the outbreak, unfortunately, resolved after several deaths (14).

• In our hospital, the urine legionella antigen is generally done also when the strep antigen is ordered, and I found it helpful when positive.

• Do sputum gram stain and culture if appropriate

• I worry about doing blood cultures on all CAP patients because we get so many contaminants as it is. These contaminants generate so much downstream costs. Also, would procalcitonin be considered in this discussion/survey also?

• I wish there were better tests!

• increasing use of a 12 viral PCR panel in this scenario as well.

• You really should ask about sputum cultures and Gram stains. As ID physicians we should be advocating their use, not buying the misinformation promoted by our pulmonary colleagues.

CAP guidelines and difficulties in diagnosing CAP

• Some of the CAP cases are really UTIs or some other type of sepsis, with some pulmonary symptoms that are due to CHF or a septic pt with low pulmonary reserve. In these cases, they are frequently caught because of the blood culture results

• Many cases of "CAP" are not pneumonia at all so I answered as if I was confident in the diagnosis and, for example, CHF was not the cause of the infiltrates.

• The CAP guidelines have been a disaster for CAP. There is little in the guidelines about the need for a diagnostic evaluation. Rather empiric antibiotics are employed without regard for etiologic agent. Often there is little evaluation and frequent errors in diagnosis. Every ID physician sees multiple patients with TB, fungus, viral infections not even considered with attendant morbidity, mortality and public health implications.

• Frequently the admitting diagnosis of CAP is wrong, & patient has other ID diagnosis.

• With hospital "value based purchasing", only require blood cultures for CAP in those going to ICU. Pressure to get antibiotics on board early has caused some blood cultures not to get done in those hospitalized not in ICUs. Obtaining blood cultures after initial antibiotics for CAP also counts against "value based purchasing". ER processes not always in line.

• The ED physicians always like to quote their literature on the uselessness of blood cultures, but we have plenty of patients admitted with "CAP" who turn out to have MSSA bacteremia, endocarditis with other organisms or even urosepsis.

• Yield of blood cultures is very low; probably the major value is in diagnosing other infections (e.g. endocarditis or gram-negative sepsis) in patients mislabeled as having CAP, which is one of the "wastebasket" diagnoses, second only to urosepsis in the emergency dept setting.
• This issue is complicated by the CMS Pneumonia core measure requiring cultures, if drawn, to be obtained prior to antibiotics being administered.
• The most important benefit of blood cultures is to evaluate for bacteremia in patients that present with atypical clinical cases for pneumonia or patients with systemic illness that might induce acute lung trauma and the pneumonia diagnosis is really a secondary finding.
• Utility of blood cultures in CAP patients is highest if obtained before antibiotics. I am rarely asked to comment on the care of patients with CAP before antibiotics. I am less inclined to recommend blood cultures for patients with CAP if they have already received antibiotics and are clinically improved.
• We recommend blood cultures for anyone admitted with CAP because the admission diagnosis is frequently wrong. For example, many patients who prove to have SBE have an admission diagnosis of CAP.
• One of the problems with the diagnosis of "CAP" is the rush for ED physicians to achieve core measures for administration of antibiotics in a timely manner. I encourage blood cultures for all patients because many of these "CAP" patients have another diagnosis such as endocarditis, biliary tract disease, etc.
• Often, diagnostic uncertainty seems to be a reason for ordering both cultures/antigens
• Still a difficult Dx to make

Comments on use of testing by other non-ID providers
• I see a small minority of CAP patients, even those hospitalized, so my answers are limited by that. Our hospitalists (including midlevels) vary but they probably order pneumococcal antigen (and legionella urinary antigen) and blood cultures on a significant number of CAP patients, though I can't quantify it.
• In a tertiary teaching hospital, we almost never see patients when they walk in the door. We may recommend, but a broad array of house staff or ER docs see the patients and order the tests.
• As an ID Consultant I see plenty of patients with pneumonia but only after the patient has been managed by other providers. I can tell you the ER physicians, Hospitalists, etc. almost always get blood cultures but almost never pneumococcal antigen.
• Non-ID clinicians including ER providers are less likely to be aware of and order Pneumococcal and Legionella antigen testing.
• Cultures are mostly ordered by ER docs. Typically we have may be 2-3 positive cultures, mostly strep pneumo, which we always cover anyway.

Miscellaneous comments
• These are ordered almost reflexively including Legionella urine Ag despite a clinical picture which seems suspect
• Blood cx ordered - whether drawn or not is an issue sometimes & whether drawn before antib given an issue not infrequently
• Causes of CAP may vary depending on location, host, exposures, etc. In Arizona CAP is approximately 20% due to *Coccidioides posadasii*. The bug to beat, however, is pneumococcus.
• Should be CLIA-waived
• It helps with treatment to felt confident in the bacterial diagnosis. I do not think blood cultures are useful except in certain patients with high suspicion of septicemia (fever, ICU, etc).
• Beside the above mentioned reasons, epidemiology is an important reason that is not mentioned here. Knowledge of prevalence of pneumococcal pneumonia is important.
• Mainly, in a world of uncertainty, I like knowing the bug even if you would tell me it won't alter treatment.
• Also important for HCAP; have seen cases of that too.