IDSA Guidelines 2016: HAP, VAP & It's the End of HCAP as We Know It (And I Feel Fine)

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"It is important to realize that guidelines cannot always account for individual variation among p atients. They are not intended to supplant physician judgement with respect to particular patie nts or special clinical situations."

-IDSA/ATS Guidelines 2016

A 73 year old man is admitted from a nursing home for an NSTEMI and is treated on the tele metry floor. Three days into his hospitalization he becomes febrile with a rising white blood c ell count, productive cough and evolving right middle lobe infiltrate. You fortunately work in a hospital with a MRSA prevalence of < 5%. The patient is well-appearing, with no underlying s tructural lung disease and has not had antibiotics in a number of years. You reach for pipera cillin-tazobactam as monotherapy, but are challenged by one of your colleagues. Should you add a second anti-pseudomonal? Vancomycin? You turn to the recent IDSA guidelines for he lp.

Healthcare Associated Pneumonia

The last IDSA guidelines for the management of hospital-acquired and ventilator-associated pne umonia were published in 2005. As many of us who have been practicing within the last dec ade have known, the entity of healthcare-associated pneumonia [HCAP] necessitated similar em piric therapy to that of hospital-acquired pneumonia [HAP] and ventilator-associated pneumonia [VAP]. HCAP risk factors for multi-drug resistant organisms [MDROs] included:

hospitalization for more than 48 hours in the last 90 days

residence in a nursing home or extended care facility

home infusion therapy

chronic dialysis within one month

home wound care

a family member with a multi-drug resistant organism.

In any patient who met any of the aforementioned criteria, or in those who had received antimicrobial therapy in the preceding 90 days, had been hospitalized for more than 5 days, who came from a place of high frequency of MDROs in the community or in those with immunosuppression, then MRSA coverage plus two anti-pseudomonal antimicrobials [of different classes] were recommended.

In the most recent update, however, HCAP has been scrapped – at least for now. A meta-analysis of 24 studies including more than 20,000 patients found that HCAP was associated with MDROs [e.g. MRSA, pseudomonas], however, the aforementioned HCAP risk factors were neither sensitive nor specific to identify at-risk patients. The poor clinical outcome noted with HCAP patients was felt to be related more strongly with age and comorbidities rather than MDROs per se. Further, there was a large publication bias suspected. The panel unanimously decided that HCAP should not be included in the HAP & VAP guidelines.

However, as a separate entity, HCAP – or some modification thereof – may be included in a forthcoming revision of the community-acquired pneumonia [CAP] guidelines.

Empiric Therapy

While the current guidelines discuss a number of issues germane to HAP and VAP including: microbiological evaluation, ventilator-associated tracheobronchitis, the use of biomarkers and clinical prediction scores, inhaled antibiotics, etc. this post will focus on standard, empiric therapy as this is a common clinical quandary [see figure 1].

Slide1

figure 1: GNB is gram negative bacilli

Firstly, some definitions are required. HAP is a pneumonia that develops at least 48 hours following hospitalization while VAP is a pneumonia that develops at least 48 hours after intubation. The panel for the current guidelines performed their own systematic reviews and meta-analyses of additional data since the 2005 publication and found that for VAP, the risk of MDROs was greatest for those who had received intravenous antibiotics within the previous 90 days [odds ratio [OR] of 12.3]. Additional VAP-MDRO risk factors included: ARDS prior to VAP [OR 3.01], renal replacement therapy prior to VAP [OR 2.5], septic shock at the time of VAP or more than 5 days of hospitalization prior to the VAP [OR 2.01].

Interestingly, with regards to HAP-MDRO risk factors, only prior intravenous antibiotic use carried an increased risk [OR 5.17]. When looking at case-control studies for MDR pseudomonas species, the authors found an increased risk [not quantified] in those having "received prior antibiotics, mechanical ventilation and a history of chronic obstructive pulmonary disease." They go on to note that patients with bronchiectasis are also at increased risk for pseudomonas colonization.

From the above, the recommendations for aggressive anti-pseudomonal coverage in HAP – somewhat confusingly – becomes those: with septic shock, requiring ventilator support, who have received intravenous antibiotics in the last 90 days, have bronchiectasis and have pseudomonas with a > 10% resistance to a potential monotherapy. There was conflicting data regarding the duration of hospitalization [e.g. more or less than 5 days] and the risk of MDRO in the HAP population; therefore, unlike VAP, this is not factored into broad spectrum antimicrobial selection.

The contentious issue of double anti-pseudomonal coverage is also addressed in the current guidelines. While the authors do note multiple VAP trials showing no difference in clinical outcome between monotherapy and dual-therapy for pseudomonas, they criticize these trials for excluding patients known to have resistant pathogens as well as excluding patients with "medical comorbidities." They also note that data for dual anti-pseudomonal coverage is exceptionally sparse in the HAP population. They therefore continue to recommend dual anti-pseudomonal empiric therapy until speciation/susceptibility testing is available. When therapy can be specifically-directed against pseudomonas based on microbiology, the authors recommend appropriate monotherapy.

Duration of Therapy

The current guidelines recommend 7 days of antimicrobial therapy for both HAP and VAP. Th e authors conducted their own meta-analysis and found no difference in mortality or recurrence between long and short-courses of therapy. This is incongruent with an often referenced trial in 2003 which noted a higher pneumonia recurrence rate if non-fermenting gram negative baci lli [e.g. pseudomonas] were isolated and patients were treated with 8 days versus 15 days of anti-microbials.

Thoughts

I return the reader to the quotation at the commencement of this post. The authors of the cur rent IDSA/ATS guidelines note at the outset of their recommendations that one must respect th e difference between a guideline and how one may proceed in any given clinical scenario. Co nsequently, the practitioner should guard him or herself against the tendency to blur recommen dation with the absolute. This general message seems particularly poignant within the current political discourse in the United States. The strength of one's conviction may have little sembl ance with objective evidence. Conversely, as the timeless Bertrand Russell reminds us:

"The degree of one's emotions varies inversely with one's knowledge of the facts."

It is imperative to acknowledge, therefore, that of the 44 recommendations in the current guidel ines, none [i.e. zero], are based on "strong-quality evidence," and 7 of the 44 recommendation s are based on "moderate-quality evidence." Accordingly, the vast majority of the recommenda tions are based on "low quality" or "very-low quality" evidence. Consider the recommendation f or dual anti-pseudomonal therapy for patients with underlying bronchiectasis. A thorough revie w by the British Thoracic Society does not recommend this practice unless a pseudomonas iso late is known to be resistant to at least one anti-pseudomonal antibiotic, and even that recom mendation is based on the poorest-quality evidence. Contrast the use of two anti-pseudomonal antibiotics when treating bronchiectasis with the use of paralytics in ARDS; the latter is suppo

rted by at least one well-performed, randomized controlled trial yet pulmonologists invariably co mply with the former – rarely, the latter.

I return to Bertrand Russell:

“If a man is offered a fact which goes against his instincts, he will scrutinize it closely, and unl ess the evidence is overwhelming, he will refuse to believe it. If, on the other hand, he is offe red something which affords a reason for acting in accordance to his instincts, he will accept it even on the slightest evidence. The origin of myths is explained in this way.”

Best,

JE

p.s. heart-lung.org learning module 5 is now live!

We recommend

Community Acquired Pneumonia (Review)

Pulmonary Central, PulmCCM,

The only VAP prevention method that saves lives is the one you’re not using

Pulmonary Central, PulmCCM,

Empiric antibiotics for HCAP/VAP were appropriate – yet deadly?

Pulmonary Central, PulmCCM,

FDA approves ceftolozane/tazobactam (Zerbaxa); 4th new antibiotic in 2014

Pulmonary Central, PulmCCM,

Antibiotics for community-acquired pneumonia: Is azithromycin out?

Pulmonary Central, PulmCCM,

Antimicrobial Tx Duration Often Exceeds Recommendations

PracticeUpdate, 2016

New Guidelines Issued to Aid Management of CAP : The consensus guidelines offer a new se t of criteria for the decision to admit a patient to the ICU.

Barbara J. Rutledge, Internal Medicine News, 2007

Prognostic Features of Patients With Influenza Requiring Hospitalization

PracticeUpdate, 2015

S. aureus Community-Acquired Pneumonia

PracticeUpdate, 2016

Toward Optimal Outpatient Therapy for Pediatric Parapneumonic Empyema.

Geetika Kumar et al., Hosp Pediatr, 2015

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