Health Care–Associated Pneumonia: Perception versus Reality

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(See the article by Seymann et al, on pages 1868–74.)

In this issue of *Clinical Infectious Diseases*, Dr Seymann et al [1] employed nine brief clinical case scenarios to ascertain the treatment practices of physicians for community-acquired pneumonia (CAP) and health care–associated pneumonia (HCAP). Using published treatment guidelines [2, 3] as the reference, the authors found that the majority of physicians were familiar with the treatment guidelines for both HCAP and CAP. However, they also observed that <10% of physicians prescribed antimicrobial regimens consistent with the guidelines for HCAP, whereas the majority prescribed regimens consistent with the CAP recommendations. These findings highlight the differences between perception and reality for the treatment of HCAP. The important implication of this observation is that there may be many patients with HCAP who are initially treated with an inappropriate antimicrobial regimen placing them at greater risk for mortality. Alternatively, this study may suggest that there are subcategories of HCAP for which treatment with broad-spectrum antibiotics to cover potential multidrug-resistant (MDR) bacteria is not necessary.

Several limitations in the design of the study may have accounted for the authors’ findings. Foremost, Seymann et al [1] provided little information regarding the severity of illness of the patients in the individual case scenarios. The presence of septic shock, more confluent infiltrates, acute respiratory distress syndrome, renal failure, metabolic acidosis, disseminated intravascular coagulation, greater Acute Physiology and Chronic Health Evaluation scores, or other disease severity scores, would all be expected to influence the prescribing practices of clinicians. It is logical to expect that a stable ambulatory nursing home patient admitted to the hospital for “possible HCAP” would be treated differently than a nursing home patient admitted to the hospital with bilateral infiltrates, hypotension requiring vasopressors, respiratory failure, and renal dysfunction. The latter nursing home patient would more likely receive an antibiotic regimen consistent with the published guidelines for HCAP covering MDR bacteria [2].

Another limitation of the study is that the reader is not provided information on the real rationale for the treatment decisions made by the responding physicians. For example, physicians practicing in environments where HCAP is uncommon and where MDR bacteria are infrequent causes of pneumonia should be considered as having answered these questions correctly based on their local experience. Similarly, patient complexity and risk factors for HCAP can vary significantly among hospitals and individual physicians’ practices. It would be expected that clinicians whose practices include significant numbers of more complex patients (multiple prior hospitalizations, antibiotic treatment, outpatient procedures including hemodialysis, wound care, infusion therapy) would be more apt to cover for HCAP than clinicians whose practices include fewer complex patients with risk factors for HCAP. Nevertheless, Dr. Seymann and colleagues provide an interesting study that raises several important questions in regard to HCAP and our current understanding of this infection.

First of all, should HCAP really be considered a distinct entity as compared to CAP? HCAP was first defined as a distinct clinical entity in the most recent American Thoracic Society–Infectious Diseases Society of America nosocomial pneumonia guidelines in order to identify a subset of patients at risk for harboring MDR organisms despite their residence outside of the hospital setting [2]. Consensus derived criteria for HCAP in that guideline included pneumonia occurring in patients with prior hospitalization in an acute care facility for at least 2 days within 90 days before the onset of HCAP; residence in a nursing home or long-term care facility;
recent receipt of intravenous antibiotic therapy, chemotherapy, or wound care, within 30 days before HCAP; or attending a hospital or dialysis clinic [2]. Using such criteria, the available US experience shows that HCAP has primarily distinguished itself from CAP in that the pathogens associated with HCAP are more often MDR bacteria [4, 5]. Therefore, empirical treatment of HCAP should be more similar to that of hospital-acquired pneumonia (HAP) and ventilator-associated pneumonia (VAP) than the treatment of CAP [2].

A number of investigators have shown that treatment with inappropriate initial antimicrobial therapy (ie, an antibiotic regimen that is not active against the offending pathogens based on in vitro susceptibility testing) in patients with nosocomial pneumonia, including HCAP, is associated with excess mortality [4, 6–8]. Therefore, it is essential that physicians treating patients at risk for HCAP understand the risk factors for this condition and the pathogens most often associated with this infection [9, 10]. This will allow them to develop treatment protocols or algorithms aimed at optimizing the administration of appropriate initial antibiotic therapy for patients with HCAP while also minimizing the unnecessary use of broad-spectrum antibiotics. However, to date, the studies of HCAP have focused on patients with microbiologically confirmed disease. Prior studies of septic shock, endocarditis, and CAP have suggested that there may be differences between culture-positive patients and culture-negative patients with these infections [11–13]. Therefore, treatment recommendations would be expected to vary depending on the likelihood that one is dealing with a culture-positive or culture-negative patient. At present there are no published studies comparing culture-positive and culture-negative patients with HCAP. However, culture-positive patients with HCAP probably have a greater severity of illness and therefore are at greater risk for infection with MDR pathogens explaining, at least in part, the findings of the available US studies [4, 5, 9].

The criteria chosen to define HCAP have been selected arbitrarily and have not been subject to rigorous investigation [2]. Therefore, there may be important risk factors that have been excluded from the definition of HCAP (eg, health care professionals developing pneumonia, spouse or caregiver of chronically ill patient presenting with pneumonia). Shorr et al [4] employed the data from the Barnes-Jewish Hospital study to develop a model for predicting the presence of HCAP, and thus antibiotic-resistant infection, among patients presenting to the hospital with pneumonia [9]. Logistic regression showed four variables associated with antibiotic-resistant pneumonia: recent hospitalization, nursing home residence, hemodialysis, and intensive care unit admission. A scoring system assigning 4, 3, 2, and 1 points, respectively, for each variable had moderate predictive power for segregating those with and without resistant bacteria. Among patients with fewer than 3 points, the prevalence of resistant pathogens was <20%, compared with 55% and >75% in persons with scores of 3–5 and >5 points, respectively. This investigation provides important insights for developing local strategies for identifying patients with HCAP. It also suggests that the more risk factors a patient has for HCAP the more likely they are to be infected with MDR pathogens.

It is also crucial to note that the risk factors for HCAP, and their ability to predict infection with MDR bacteria, can vary from one hospital or region to another. A recent international forum on respiratory tract infections highlighted the need to better define HCAP as a distinct entity and to identify variability in the prevalence of the infection as well as the risk factors predisposing to it [14]. In this paper, 2 different categories of HCAP were described based on the presence of 2 of the 3 following risk factors: (1) severe pneumonia requiring mechanical ventilation, (2) prior antibiotics for >6 days within the past 6 months, or (3) poor functional status, as defined by an Activity of Daily Living (ADL) score >12.5. Patients with at least 2 of these criteria would be treated for potentially MDR infection whereas those with one would not. However, this risk categorization strategy has not been validated. Nevertheless, studies from other parts of the world have shown that the risk factors for HCAP and the prevalence of MDR pathogens vary considerably [15–18]. In general, the experience from Europe suggests that there are fewer patients with HCAP admitted to the hospital setting compared to what has been reported from the United States.

The available data highlight the complexity of HCAP, but several consistent themes seem to be emerging. It appears that patients with HCAP have a greater risk of hospital mortality than do patients with CAP [19, 20]. This may be related to several factors including differences in comorbidities and the presenting severity of illness among these categories of pneumonia. However, a critical disparity appears to be the greater administration of initial inappropriate antimicrobial therapy in patients with HCAP compared to those with CAP [4, 19]. HCAP patients are more frequently infected with MDR pathogens and thus are at greater risk for receiving inappropriate initial therapy. The challenge for clinicians is to correctly identify the HCAP patient who is most likely to benefit from empirical treatment with broad-spectrum antibiotics [9]. Future investigations are required to better define patients with HCAP who are likely to be infected with MDR pathogens. Additionally, clinical studies examining the impact of such therapy on clinical outcomes and the emergence of antimicrobial resistance in HCAP are also needed.

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References


