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## **Community-Acquired Pneumonia**

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Seminars in Respiratory and Critical Care Medicine

**Community Acquired Pneumonia: A Global Perspective**

Editors: Charles Feldman and James D Chalmers

## **Preface**

It is our pleasure to welcome you to this special edition of Seminars in Respiratory and Critical Care Medicine, dedicated to the many facets of community-acquired pneumonia (CAP) and its global impact.

Lower respiratory tract infections and pneumonia remain the leading infectious cause of death worldwide and also the most common fatal infection presenting to hospital in both the developed and developing world.

Mortality rates have remained relatively static for the past decades despite advances in diagnostics, supportive treatment and the development of new antibiotics. The growing global challenges include antibiotic resistance, the emergence of new, antibiotic resistant pathogens, emerging pandemic viruses, and the global epidemic of HIV infection which leads to large populations of patients being at increased risk of pneumococcal disease and other respiratory infections.

Meeting these challenges requires a concerted effort on the part of global researchers, the pharmaceutical industry, regulators and public health to recognise pneumonia as a key global health challenge and to push for improvements in the diagnosis, management and prevention of CAP.

This issue provides a platform for some of the world's leading pneumonia experts to describe these global challenges and to propose their solutions.

The first part of the issue will highlight the global impact of CAP, with individual chapters dedicated to the Asia-pacific region, Africa and South America. As we point out, while the microbiology of community-acquired pneumonia is quite similar between different regions of the world, with dominance of *S. pneumoniae* as the causative pathogen, the approach to healthcare and the characteristics of the patients makes the management in these regions markedly different. The literature of CAP is heavily skewed towards reports from Europe and North America, as are the majority of randomized clinical trials, where patients with CAP are predominantly elderly, with co-morbid conditions, and cared for in high resource settings. CAP in sub-Saharan Africa, where HIV

prevalence is high, leads to a marked difference in patient characteristics with young patients, often with co-infection with *Mycobacterium tuberculosis* and other opportunistic infections, leading to a huge diagnostic challenge in a resource poor setting. Thus diagnostic pathways or treatment strategies that rely on medical technology that may be feasible in the West, may be less feasible in other global settings.

In the second half of the issue, we review a series of critical emerging issues in the international management of CAP. Inevitably, antibiotic resistance is a dominant theme. A decade ago, it would be unthinkable to have a section of a CAP monograph dedicated to methicillin resistant *Staphylococcus aureus* (MRSA), but the rapid growth in prevalence of MRSA and the move of MRSA from a hospital-acquired infection to one prevalent in the community has led to some studies reporting MRSA as a dominant pathogen, or at least a significant and common pathogen, worldwide. A detailed discussion of the mechanisms of antibiotic resistance is provided, while our chapter on diagnostics reviews the potential to identify and predict antibiotic resistance in clinical practice. Antibiotic stewardship is an international priority to combat antimicrobial resistance and relies on a combination of individual education, improved diagnostics and evidence based guidelines that balance the need to cover common pathogens, and the need to use antibiotics rationally.

Antibiotics are the only therapy in widespread use for community-acquired pneumonia patients, and have been since their routine availability in the 1950's. Reducing mortality and morbidity from CAP requires the identification of improved methods of treatment including the potential for anti-inflammatory and immunomodulatory drugs. A series of recent randomized controlled trials suggest that steroids may have a role in a subgroup of CAP patients, although the optimal patient population and method of treatment has not been defined. Additional prospects for adjuvant therapies including statins, immunoglobulins and stem cells are discussed.

With an aging population, a large proportion of pneumonia patients will die from complications of their co-morbidities rather than directly due to the pneumonia themselves. Among these co-morbidities, cardiovascular diseases are the predominant cause of death, and cardiovascular events are increasingly recognised during hospitalization for CAP. The mechanisms for this will be discussed, as well as the exciting possibility that we may prevent infection-related deaths by using cardioprotective therapies in future.

We hope you enjoy the unique focus of this issue on the global challenges of the disease, and emerging threats of the 21<sup>st</sup> century. Community-acquired pneumonia remains common, often fatal, neglected in terms of clinical trials and new therapies, and crucial to the daily practice of every respiratory and critical care physician worldwide. This collection of reviews highlights the key issues, the key research questions and the opportunities for the future.