

The Latest Clinical Advances in Antimicrobial Use— A Managed Care Perspective

The judicious use of antibiotics is a subject of growing concern throughout the medical community. Pathogen resistance to both older and newer antibiotic therapies has increased at an alarming rate over the past 5 years.

Primary care physicians are on the front line of antibiotic prescribing as they are the first physicians who treat patients with respiratory complaints. Because of increasing pathogen resistance to antibiotics, the decisions made by primary care providers about whether to prescribe antibiotics—as well as the antibiotics they choose to prescribe—affect not only patient outcome but also the future efficacy of antibiotics throughout the population at large. In effect, these physicians are not only treating their patients but making serious decisions that will determine the future course of infectious disease around the globe.

This Special Report supplement comprises presentations that took place on August 5, 2000, when leading researchers and authorities on antimicrobial trends convened in Montreal, Canada, to discuss findings from the most recent investigations about physician prescribing patterns and emerging resistance patterns.

Irving Steinberg, PharmD, Director of the Division of Pediatric Pharmacotherapy at the University of Southern California Schools of Pharmacy and Medicine, reports that even when the clinician is aware of

appropriate antibiotic use, multiple studies show consistently inappropriate prescribing of antibiotics. A number of factors contribute to inappropriate prescribing, including significant pressure from patients and parents for prescription drugs.

Nearly every speaker reported at length on how the resulting increase in antibiotic consumption has led to commensurate increases in bacterial resistance. Perhaps most surprisingly, when resistance results in the failure of a therapeutic agent, the vast majority of medication switches that physicians prescribe are within the same class of agents. Such prescribing patterns further contribute to pathogen resistance.

Angela B. Brueggemann, MS, in the Department of Pathology at the University of Iowa College of Medicine, reports that resistance currently exists at high rates across a wide spectrum of therapies, including beta-lactams, macrolides, tetracyclines, chloramphenicol, and trimethoprim/sulfamethoxazole. Moreover, strains resistant to penicillin plus at least 2 other antimicrobial classes are also increasing in prevalence. Currently in the United States, 63% of penicillin-resistant *Streptococcus pneumoniae* are high-level resistant, representing a startling increase from 41% just 2 years ago. Ms. Brueggemann discusses in detail newly defined susceptibility breakpoints and their ramifications for the meaningful prediction of patient outcome.

William Bishai, MD, PhD, Associate Professor of Medicine and International Health at Johns Hopkins University School of Public Health, challenges the clinical relevance of antimicrobial resistance. He reports that although the incidence of drug resistance in *S pneumoniae* is trending upward, a review of the medical literature reveals that mortality rates have remained consistent for nearly 50 years. Dr. Bishai suggests that in fact, a correlation between drug-resistant *S pneumoniae* and clinical failure has yet to be proved. Therefore, therapeutic approaches to treatment should not be based solely on resistance issues but also on other important considerations such as pharmacology, safety, tolerability, and dosing convenience.

David P. Nicolau, PharmD, Coordinator for Research, Department of Medicine, Division of Infectious Diseases and Pharmacy at Hartford Hospital, notes that antibiotics eradicate bacteria by an interaction of microbiological activity and pharmacokinetics. Dr. Nicolau stresses the need for clinicians to also consider that the pharmacodynamic interaction between drug and pathogen is different for the various classes of antibiotics. He also details methods for optimizing the use of antimicrobial therapy.

Richard E. Chaisson, MD, Professor of Medicine, Epidemiology, and International Health at Johns Hopkins University School of Medicine, out-

lines the primary therapeutic guidelines for the treatment of community-acquired pneumonia (CAP). Such guidelines have generated significant debate among primary care physicians as the guidelines conflict and in some instances are outdated in light of emerging resistance trends. Dr. Chaisson discusses the key points of dissension within medical guidelines, citing a critical need for a more consistent and collaborative approach to CAP guidelines in order to foster more responsible prescribing by the medical community.

Eugene Spiritus, MD, Senior Medical Director for the University of California, Irvine Medical Center, reflects upon the relationship between increased spending and improved quality. He suggests that the 2 in fact do not represent a cause/effect relationship. To the contrary, increased medical care can in fact adversely impact outcome. The challenge for the medical community is to determine the value point where the best quality is achieved with the least cost. Dr. Spiritus proposes that current approaches to pharmacoeconomic modeling are inadequate to this task. He also reports on the pharmacoeconomic impact of inappropriate use of antibiotic drugs. Contrary to popular opinion, prescribing antibiotics at the first office visit has not proved to significantly improve patient outcome and in fact tends to actually increase overall costs.