

Preface



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Guest Editor

Respiratory viruses continue to be a fascinating subject. The mutability of these viruses leads to the periodic emergence of new serotypes or species of viruses as human pathogens. Because these viruses are readily transmitted, a new respiratory virus that emerges can spread rapidly. The coronavirus associated with the severe acute respiratory syndrome (SARS) and the novel influenza A (H1N1) virus (swine influenza) are two examples of respiratory viruses that spread very quickly after emerging. According to data from the World Health Organization, there have been 55,867 cases and 238 deaths due to the H1N1 virus to date (http://www.who.int/csr/don/2009_06_24/en/index.html, accessed June 25, 2009). This outbreak underscores the importance of our continued attention to the epidemiology, manifestations, and diagnosis of respiratory viruses.

Viral culture and immunological assays have been the mainstays of viral diagnosis for decades. These methods are cheaper and technically simpler than the currently available molecular methods, but they are less sensitive than nucleic acid amplified tests (NAATs). Recent improvements in viral culture and immunoassays have led to increased sensitivity, reduced turnaround time, and the ability to detect recently discovered viruses. These improvements are described in the articles by Ms. Riley and myself who discuss viral culture, and Dr. Landry, who discusses immunological assays. Drs. Principi and Esposito extend the discussion of immunoassays with an article on the utility of rapid immunoassays for influenza virus and respiratory syncytial virus (RSV) in children.

There is a revolution underway in the methods for diagnosis of respiratory viruses. NAATs have greatly improved the sensitivity of detection of these viruses. Sophisticated laboratories have been performing user-designed (“home brew”) assays or analyte-specific reagent-based tests, but the recent introduction of NAATs approved by the Food and Drug Administration (FDA) for respiratory viruses will begin to make NAATs accessible to more laboratories. FDA-approved NAATs are discussed by Drs. Kehl and Kumar, who also discuss some important issues to consider in the design of user-developed assays. We take a look at the exciting future of molecular methods of testing for respiratory viruses in the article by Drs. Wu and Tang.

New respiratory viruses continue to be discovered. Cutting-edge methods have led to the discovery of several viruses that have presumably infected humans for decades, but which have only recently come to our attention. The recently discovered bocaviruses and the current controversy about the role of these viruses in disease are discussed in the article by Drs. Chow and Esper. Two strains of coronaviruses that were recently discovered (HCoV-NL63 and HCoV-HKU1), but which have presumably infected humans for a long time, are discussed by Drs. Wevers and van der Hoek. These authors also discuss a truly new human pathogen, the SARS coronavirus, which caused the highly lethal outbreak of SARS in 2002 to 2003. These newly discovered viruses remind us that there is still a great deal to be learned about respiratory virus infections, and that continued research is needed.

Recent developments in clinical aspects of respiratory virus infections are discussed in the final two articles in this volume. Dr. Murata discusses the problematic history of development of a vaccine for RSV and, more importantly, the several avenues of current investigation that might lead to a vaccine for RSV. The role of respiratory viruses in bronchiolitis and in asthma is discussed by Drs. Mansbach and Camargo. These authors also review some very recent and interesting data that suggest that levels of vitamin D may be related to wheezing and asthma.

I enjoyed reading these reviews and I hope you do, too. They represent the most current information about respiratory viruses by leaders in the field. This area of laboratory medicine is advancing quickly, with new diagnostic tests and viruses appearing frequently, and for that reason it continues to be very exciting.

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