Antimicrobial resistance is a global public health threat and a danger that continues to escalate. These menacing bacteria are having an impact on all populations; however, until recently, the increasing trend in drug-resistant infections in infants and children has gone relatively unrecognized. This article highlights the current clinical and molecular data regarding infection with antibiotic-resistant bacteria in children, with an emphasis on transmissible resistance and spread via horizontal gene transfer.

New Developments in Rapid Diagnostic Testing for Children

The advent of new diagnostics assays for Group A Streptococcus, influenza, and respiratory syncytial virus now provide rapid results with increased sensitivity and specificity. Molecular testing is no longer confined to the walls of the laboratory but moving to the patient in the form of point-of-care tests. In addition, multiplex syndromic panels are allowing broad testing of pathogens associated with a single clinical presentation. This article focuses specifically on rapid diagnostic tests for pathogens most affecting children. Rapid and accurate pathogen detection in children may result in decreased time to optimal antimicrobial treatment and improved patient outcomes.

Current Concepts in the Evaluation and Management of Bronchiolitis

Bronchiolitis is a lower respiratory tract illness caused by viral infection in children 2 years and younger, frequently associated with wheezing on physical examination. It is a common cause of hospitalization, particularly in patients with risk factors for more serious disease. The diagnosis can be made based on clinical signs and symptoms alone, and care is generally supportive with a focus on safely doing less for symptomatic children. Bronchodilators, systemic steroids, and other therapies have been shown to have no significant effect on hospitalization rates, length of stay, or symptom duration.

Pediatric Community-Acquired Pneumonia in the United States: Changing Epidemiology, Diagnostic and Therapeutic Challenges, and Areas for Future Research

Community-acquired pneumonia (CAP) is one of the most common serious infections in childhood. This article focuses on pediatric CAP in
the United States and other industrialized nations, specifically highlighting the changing epidemiology of CAP, diagnostic and therapeutic challenges, and areas for further research.

Emerging Respiratory Viruses in Children 65
Jennifer E. Schuster and John V. Williams

Respiratory viral infections are a leading cause of pediatric disease. Emerging respiratory viruses can cause outbreaks with significant morbidity and mortality or circulate routinely. The rapid identification of pathogens, epidemiologic tracing, description of symptoms, and development of preventative and therapeutic measures are crucial to limiting the spread of these viruses. Some emerging viruses, such as rhinovirus C and influenza C, circulate yearly but were previously undetected owing to limited diagnostic methods. Although some pathogens have a geographic focus, globalization dictates that providers be aware of all emerging diseases to recognize outbreaks and diagnose and treat patients.

Updates on Influenza Vaccination in Children 75
Angela J.P. Campbell and Lisa A. Grohskopf

Influenza vaccination is recommended for all children 6 months and older who do not have contraindications. This article provides an overview of information concerning burden of influenza among children in the United States; US-licensed influenza vaccines; vaccine immunogenicity, effectiveness, and safety; and recent updates relevant to the use of these vaccines in pediatric populations. Influenza antiviral medications are discussed. Details concerning vaccine-related topics may be found in the current US Centers for Disease Control and Prevention/Advisory Committee on Immunization Practices recommendations for use of influenza vaccines (https://www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/flu.html). Additional information on influenza antivirals is located at https://www.cdc.gov/flu/professionals/antivirals/index.htm.

Pediatric Considerations for Postexposure Human Immunodeficiency Virus Prophylaxis 91
William J. Muller and Ellen G. Chadwick

Exposures that carry the risk of transmission of blood-borne disease are rare in pediatrics but cause great anxiety in patients and families. Specialists in pediatric infectious diseases are often asked about initial antimicrobial prophylaxis in these cases. Guidelines for nonoccupational postexposure prophylaxis for human immunodeficiency virus have evolved as new formulations and medications become available and greater experience is obtained in assessing relative risks of different exposures and relative costs and benefits for different interventions. This article discusses the evidence behind recent updates to Centers for Disease Control and Prevention guidelines for nonoccupational postexposure prophylaxis for human immunodeficiency virus, focusing on application in the pediatric population.
Norovirus Illnesses in Children and Adolescents

Minesh P. Shah and Aron J. Hall

Norovirus is a leading cause of childhood vomiting and diarrhea in the United States and globally. Although most illnesses caused by norovirus are self-resolving, severe outcomes may occur from dehydration, including hospitalization and death. A vast majority of deaths from norovirus occur in developing countries. Immunocompromised children are at risk for more severe outcomes. Treatment of norovirus illness is focused on early correction of dehydration and maintenance of fluid status and nutrition. Hand hygiene, exclusion of ill individuals, and environmental cleaning are important for norovirus outbreak prevention and control, and vaccines to prevent norovirus illness are currently under development.

Changing Epidemiology of Haemophilus influenzae in Children

David F. Butler and Angela L. Myers

*Haemophilus influenzae* remains a common cause of illness in children throughout the world. Before the introduction of vaccination, *H influenzae* type b (Hib) disease was the leading cause of bacterial meningitis in young children and a frequent cause of pneumonia, epiglottitis, and septic arthritis. Clinicians should remain diligent in counseling parents on the dangers of Hib and provide vaccination starting at 2 months of age. The epidemiology of invasive *H influenzae* disease is shifting. It is imperative that clinicians recognize the changing epidemiology and antibiotic resistance patterns for *H influenzae* to optimize care in hospital and ambulatory settings.

Syphilis in Children

Sarah Heston and Sandra Arnold

Syphilis, caused by *Treponema pallidum*, is transmitted both sexually and transplacentally. Untreated syphilis is a progressive disease that may result in death or disability in children and adults. Syphilis diagnosis requires 2-stage serologic testing for nontreponemal and treponemal antibodies. Congenital syphilis diagnosis requires careful review of maternal testing and treatment, comparison of maternal and neonatal nontreponemal antibody titers, and clinical evaluation of the neonate. In this article, the authors present the current epidemiology of syphilis and the clinical manifestations, diagnosis, and management of syphilis as they relate to pediatric practice, specifically, congenital syphilis and acquired syphilis in adolescents and pregnant women.

Encephalitis in US Children

Kevin Messacar, Marc Fischer, Samuel R. Dominguez, Kenneth L. Tyler, and Mark J. Abzug

Encephalitis is an uncommon but severe disease characterized by neurologic dysfunction with central nervous system inflammation. Children with encephalitis should receive supportive care and empiric therapies for common and treatable causes while prioritizing diagnostic evaluation for common, treatable, and high-risk conditions. Even with
an extensive diagnostic workup, an infectious cause is identified in less than half of cases, suggesting a role for postinfectious or noninfectious processes.

Fever in the Returning Traveler

Felicia A. Scaggs Huang and Elizabeth Schlaudecker

Millions of children travel annually, whether they are refugees, international adoptees, visitors, or vacationers. Although most young travelers do well, many develop a febrile illness during or shortly after their trips. Approaching a fever in the returning traveler requires an appropriate index of suspicion to diagnose and treat in a timely manner. As many as 34% of patients with recent travel history are diagnosed with routine infections, but serious infections such as malaria, enteric fever, and dengue fever should be on the differential diagnosis because of the high morbidity and mortality in children.

Malaria in Children

Natasha M. Kafai and Audrey R. Odom John

Malaria remains widespread throughout the planet, and increasing global travel continues to lead to imported cases of malaria in travelers, including children. This article provides an overview of pediatric malaria, including its epidemiology, clinical features, diagnosis, treatment, and prevention in travelers.

Management of Ebola Virus Disease in Children

Indi Trehan and Stephanie C. De Silva

The West African outbreak of 2013 to 2016 was the largest Ebola epidemic in history. With tens of thousands of patients treated during this outbreak, much was learned about how to optimize clinical care for children with Ebola. In anticipation of inevitable future outbreaks, a firsthand summary of the major aspects of pediatric Ebola case management in austere settings is presented. Emphasis is on early and aggressive critical care, including fluid resuscitation, electrolyte repletion, antimicrobial therapy, and nutritional supplementation.

Zika Virus Infection in Children

David Taylor Hendrixson and Jason G. Newland

Zika virus is a mosquito-borne Flavivirus responsible for symptomatic and asymptomatic infections in humans. Zika was first identified in Africa as a cause of sporadic febrile illness. Beginning in 2015, Zika virus infection was identified in Brazil and linked with several symptomatic infections. Notably, congenital infections were observed with marked neurologic abnormalities. Diagnosis relies on the detection of Zika virus by real-time polymerase chain reaction or by the presence of anti-Zika antibodies. Treatment of this viral illness remains supportive; however, proactive screening and interventions are indicated in the treatment of infants with symptomatic congenital infection.
Infections in Children on Biologics

Lara Danziger-Isakov

Biologics target various pathways to modify immunologic activity. Biologic use to treat pediatric patients continues to expand, but limited data exist regarding infectious complications of these agents, especially for newer agents. Infectious events reported in the literature for pediatric patients indicate that a variety of bacterial, mycobacterial, viral, and fungal infections can occur. Further pediatric-specific reports are needed to fill knowledge gaps in the complications related to these agents.

Overview of Infections Complicating Pediatric Hematopoietic Cell Transplantation

Monica I. Ardura

Hematopoietic cell transplants (HCTs) are increasingly being performed in children for the treatment of malignant and nonmalignant diseases. Infections remain an important cause of morbidity and mortality after HCT, where the type and timing of infection is influenced by host, transplant, and pathogen-related factors. Herein, an overview of the epidemiology of infections is presented and organized by timing before and after HCT, understanding that infection may occur at any time point until there is successful immune reconstitution.