

Updates in Tropical Medicine

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Contents

Preface: What's in a Name and Why "Tropical Medicine" Matters in 2019	xiii
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Michael Libman and Cédric P. Yansouni

Introduction to Tropical Medicine	1
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Priscilla Rupali

Tropical medicine deals with infectious and noninfectious diseases geographically located between the tropics of Cancer and Capricorn. It encompasses diseases that result from poverty, poor sanitation, infrastructure, and inadequate health resources. Lack of availability of clean water and food made with unhygienic practices add to the morbidity of these diseases. The tropics are reeling under the onslaught of climate change, deforestation, and air, water, and soil pollution, which worsens an already fragile health system. This article provides an overview of the definition, classification, geophysical problems, syndromic approach to common tropical infections, diagnostic challenges in the tropics, and access to medicines.

Venomous Bites, Stings, and Poisoning: An Update	17
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David A. Warrell

This article discusses the epidemiology, prevention, clinical features, and treatment of venomous bites by snakes, lizards, and spiders; stings by fish, jellyfish, echinoderms, insects, and scorpions; and poisoning by ingestion of fish, turtles, and shellfish. Invertebrate stings cause fatalities by anaphylaxis, secondary to acquired hypersensitivity (Hymenoptera, such as bees, wasps, and ants; and jellyfish), and by direct envenoming (scorpions, spiders, jellyfish, and echinoderms). Simple preventive techniques, such as wearing protective clothing, using a flashlight at night, and excluding venomous animals from sleeping quarters, are of paramount importance to reduce the risk of venomous bites and stings.

Malaria: What's New in the Management of Malaria?	39
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Katherine Plewes, Stije J. Leopold, Hugh W.F. Kingston, and Arjen M. Dondorp

The global burden of malaria remains high, with 216 million cases causing 445,000 deaths in 2016 despite first-line treatment with artemisinin-based combination therapy. Decreasing transmission in Africa shifts the risk for severe malaria to older age groups as premunition wanes. Prompt diagnosis and treatment with intravenous artesunate in addition to appropriate supportive management are critical to reduce deaths from severe malaria. Effective individual management is challenging in settings with limited resources for higher-level care. Adjunctive therapies targeting the underlying pathophysiological pathways have the potential to reduce mortality. Resistance to artemisinin derivatives and their partner drugs threaten malaria management and control.

Human African Trypanosomiasis: Progress and Stagnation

61

Emmanuel Bottieau and Jan Clerinx

Control efforts have considerably reduced the prevalence of human African trypanosomiasis (HAT) due to *Trypanosoma brucei gambiense* in West/Central Africa and to *Trypanosoma brucei rhodesiense* in East Africa. Management of *T. brucei gambiense* HAT has recently improved, with new antibody-based rapid diagnostic tests suited for mass screening and clinical care, and simpler treatments, including the nifurtimox-eflornithine combination therapy and the new oral drug fexinidazole to treat the second stage of the disease. In contrast, no major advance has been achieved for the treatment of *T. brucei rhodesiense* HAT, a zoonosis that occasionally affects short-term travelers to endemic areas.

Visceral Leishmaniasis: Recent Advances in Diagnostics and Treatment Regimens

79

Johan van Griensven and Ermias Diro

Diagnostic advances in visceral leishmaniasis include the development of the rK39 and rK28 rapid diagnostic test. The direct agglutination test is also increasingly used, as well as conventional and real-time polymerase chain reaction, which also performs well on peripheral blood. The choice of treatment for visceral leishmaniasis depends on the geographic region where the infection is acquired. Liposomal amphotericin B is generally found to be safe and effective in most endemic regions of the world; antimonials still remain to be the most effective in eastern Africa despite its high toxicity. Combination therapy is increasingly explored. Immunosuppressed patients require adapted diagnostic and therapeutic strategies.

Cutaneous Leishmaniasis: Updates in Diagnosis and Management

101

Naomi E. Aronson and Christie A. Joya

Cutaneous leishmaniasis (CL) is a diverse human disease caused by more than 20 *Leishmania* species transmitted by the bite of an infected sand fly. Diagnostic testing is recommended to confirm infection and determine the infecting species. Treatment decisions are complex and providers should consider infecting species, patient comorbidities, extent and location of lesions, and previous treatments. There is no single universal treatment for CL and some treatment can have toxicity. Treatment should be individualized and factors, such as self-healing nature of this infection, risk of metastatic complications (ie, mucosal leishmaniasis), and patient wishes, need to be included in individual risk-benefit treatment decisions.

American Trypanosomiasis (Chagas Disease)

119

Luis E. Echeverria and Carlos A. Morillo

American trypanosomiasis is caused by a parasite endemic of the Americas. Current migration has globalized Chagas disease. Acute infection usually resolves spontaneously. Nonetheless, 20% to 40% develop cardiomyopathy 20 to 30 years later. Progression to cardiomyopathy is devastatingly rapid, manifesting with heart failure and sudden death.

Etiologic treatment is highly effective and recommended in those with acute infections, congenital infections, and parasite reactivation, and women of childbearing age, but in asymptomatic *Trypanosoma cruzi* carriers and patients with early cardiomyopathy remains controversial and under investigation. Progression of heart failure is rapid and accounts for most of the morbidity and related mortality.

Strongyloidiasis: A Neglected Tropical Disease

135

Alejandro Krolewiecki and Thomas B. Nutman

Most of the 30 to 100 million people infected with *Strongyloides stercoralis* have subclinical (or asymptomatic) infections. These infections are commonly chronic and longstanding. A change in immune status can increase parasite numbers, leading to hyperinfection syndrome, dissemination, and death if unrecognized. The use of corticosteroids and HTLV-1 infection are most commonly associated with the hyperinfection syndrome. *Strongyloides* adult parasites reside in the small intestine and induce immune responses that are like other nematodes. Definitive diagnosis of *S stercoralis* infection is based on stool examinations for larvae. *S stercoralis* remains largely neglected.

Neurocysticercosis: An Individualized Approach

153

Christina M. Coyle

Neurocysticercosis is an infection of the central nervous system by the larval stage of the pork tapeworm *Taenia solium*. The combination of modern diagnostic tests, use of antiparasitic drugs, improved anti-inflammatory treatments, and minimally invasive neurosurgery has improved outcomes in patients with neurocysticercosis. This parasitic infection is complex in both the clinical presentation and the treatment approach, which depends on the number of cysts, location in the brain, stage of degeneration, and host inflammatory response. Therapeutic interventions for each location are different; therefore, principles for managing parenchymal disease cannot be applied to extraparenchymal disease and should be individualized.

Sound Around the World: Ultrasound for Tropical Diseases

169

Daniel Kaminstein, Tom Heller, and Francesca Tamarozzi



Video content accompanies this article at <http://www.id.theclinics.com/>.

Ultrasound for diagnosis and staging of schistosomiasis and echinococcosis have paved the way over the past several decades for the application of ultrasound in tropical diseases. Until recently, the size and cost of ultrasound systems limited the application in low-resource settings. The increase in portable ultrasound systems has given more clinicians access to ultrasound, and clinically based protocols for the care of patients have emerged, such as focused assessment with sonography for HIV/TB and tropical cardiac ultrasound. This article explores the history and current use of ultrasound in these diseases and highlights their application in the care of patients.

New Tools to Test Stool: Managing Travelers' Diarrhea in the Era of Molecular Diagnostics	197
Eric J. Eckbo, Cédric P. Yansouni, Jeffrey M. Pernica, and David M. Goldfarb	
<p>Travelers' diarrhea affects up to 60% of visitors to tropical and subtropical regions. Although symptoms are generally self-limited, some infections are associated with significant morbidity and occasional mortality. Newer molecular diagnostic techniques allow for highly sensitive, specific, and expeditious testing of a wide range of potential pathogens. Identification of the causative pathogen of travelers' diarrhea allows for targeted therapy and management and a reduction in empiric broad-spectrum coverage.</p>	
The Rickettsioses: A Practical Update	213
Lucas S. Blanton	
<p>Rickettsia are small, obligately intracellular, gram-negative bacilli. They are distributed among a variety of hematophagous arthropod vectors and cause illness throughout the world. Rickettsioses present as an acute undifferentiated febrile illness and are often accompanied by headache, myalgias, and malaise. Cutaneous manifestations include rash and eschar, which both occur at varying incidence depending on the infecting species. Serology is the mainstay of diagnosis, and the indirect immunofluorescence assay is the test of choice. Reactive antibodies are seldom present during early illness, so testing should be performed on both acute-phase and convalescent-phase sera. Doxycycline is the treatment of choice.</p>	
Antimicrobial Resistance in the Tropics	231
Makeda Semret and Louis-Patrick Haraoui	
<p>Antimicrobial resistance (AMR) is on the rise and spreading rapidly worldwide. Low- and middle-income countries, because of weak health systems, are particularly vulnerable to this increase. Population mobility further fuels the globalization of AMR, with travelers and migrants at significant risk of harboring drug-resistant organisms. This article provides an overview of the factors that contribute to the emergence, spread, and persistence of AMR, particularly antibiotic-resistance, in the tropics. Also addressed are clinical implications of this emergent global crisis for migrants and travelers, using specific scenarios commonly encountered in those populations.</p>	
Evidence-Based Clinical Management of Ebola Virus Disease and Epidemic Viral Hemorrhagic Fevers	247
Christophe Clément, Neill K.J. Adhikari, and François Lamontagne	
<p>The 2014 to 2016 Ebola virus disease outbreak underscored the threat posed by hemorrhagic fevers. Filoviral outbreaks have been identified since 1967, but data collection has remained sparse, limiting current knowledge of these illnesses. Documentation of objective physical signs and laboratory parameters and appropriate clinical management are connected and interdependent. Implementing both is necessary to improve</p>	

outcomes. Clinical features include severe volume depletion due to diarrhea and vomiting, shock, rhabdomyolysis, and metabolic disturbances. Overt hemorrhage is uncommon. Point-of-care devices and inexpensive electronic equipment enable better monitoring and record keeping in resource-limited settings.

Migration Medicine

265

Christina Greenaway and Francesco Castelli

Migration is increasing and practitioners need to be aware of the unique health needs of this population. The prevalence of infectious diseases among migrants varies and generally mirrors that of their countries of origin, but is modified by the circumstance of migration, the presence of pre-arrival screening programs and post arrival access to health care. To optimize the health of migrants practitioners; (1) should take all opportunities to screen migrants at risk for latent infections such as tuberculosis, chronic hepatitis B and C, HIV, strongyloidiasis, schistosomiasis and Chagas disease, (2) update routine vaccines in all age groups and, (3) be aware of "rare and tropical infections" related to migration and return travel.