

Infectious Diseases

Peter F. Weller, MD, Chief



Rachel Baden, MD, consults with a patient

The Infectious Diseases Division at BIDMC is recognized nationally and internationally for excellence in clinical care and teaching and its broad research agenda. The Infectious Diseases Division provides clinical care through its inpatient consultation services for specialized immunocompromised patients; its outpatient Infectious Diseases,

Urgent Care and Travel Clinics; and its new OPAT (Outpatient Parenteral Antibiotic Therapy) Clinic. The Division is actively involved in the education of Harvard Medical School students, BIDMC residents and Infectious Diseases fellows. Division faculty's publications and presentations have a broad, national impact. Amongst our many activities, we highlight in this report initiatives related to enhancing the quality of care for patients with bacterial infections.

2009–2010 HIGHLIGHTS

Outpatient Parenteral Antibiotic Therapy (OPAT) Program

Increasing numbers of patients from multiple medical and surgical services at BIDMC require continued outpatient intravenous antibiotic therapies for varied medical and surgical conditions, including osteomyelitis and endocarditis. This situation provides both challenges and opportunities: Management of continued outpatient antibiotic treatments requires substantial efforts by committed and

The Infectious Diseases Division has initiated, in concert with the Microbiology Laboratory and new medical center guidelines, and implemented a program at BIDMC that assures that all inpatients with significant blood-culture-documented bloodstream infections, including *Staphylococcus aureus*, fungi and sustained bacteremias by any organisms, are evaluated daily by Infectious Diseases staff physicians and are provided with Infectious Diseases consultations to assure that all patients with significant bloodstream infections obtain optimal infectious diseases consultative advice.

knowledgeable personnel to monitor and supervise issues including needed physician outpatient follow-up visits, outpatient medication levels and medication-related safety monitoring lab tests, and scheduling of needed follow-up exams (e.g., CTs, MRIs, echocardiograms). Optimal outpatient antibiotic management can shorten inpatient admissions, assures quality of outpatient medical care and obviates premature re-admissions related to PICC-line issues, adverse reactions to medications or failures of longer term treatment.

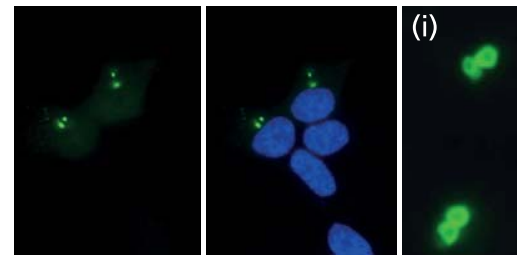
To address these issues, the Infectious Diseases Division has established an innovative Outpatient Parenteral Antibiotic Therapy (OPAT) Clinic where plans for outpatient antibiotic treatment regimens are initiated prior to discharge and patients are seen within 1-2 weeks after discharge by an ID staff physician and thereafter during 2-10 weeks (or longer) of ongoing antibiotic treatments. Requisite safety labs (including antibiotic levels, LFTS, CBCs, etc) during outpatient antibiotic therapy that must be obtained during the outpatient treatment course are closely monitored to assure that they are being obtained and that the tests remain within established normal ranges. Any needed follow-up imaging studies are scheduled by OPAT support staff. The OPAT Clinic assumes primary medical responsibilities for providing expert

parenteral antibiotic therapy – services that are not provided by the referring physicians or the patients’ PCPs.

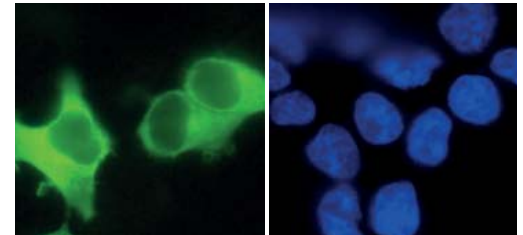
Research

Studies led by Dr. Roger Shapiro have evaluated issues related to preventing mother-to-child transmission of human immunodeficiency virus type 1. Dr. Shapiro and colleagues studied the efficacies of two highly active antiretroviral therapies administered to pregnant women in Bostwana. Two therapies, a nucleoside reverse-transcriptase inhibitor regimen and a protease-inhibitor regimen, proved to be highly effective in eliciting virologic suppression when administered from pregnancy through 6 months post-partum, and overall mother-to-child transmission was only 1.1%.

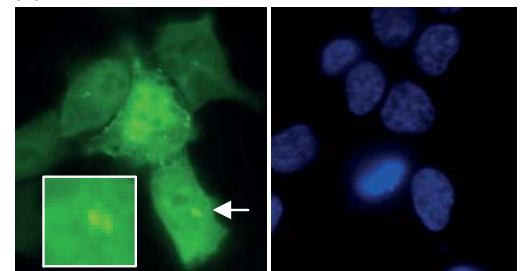
(1) EBV TK¹⁻⁶⁰⁷



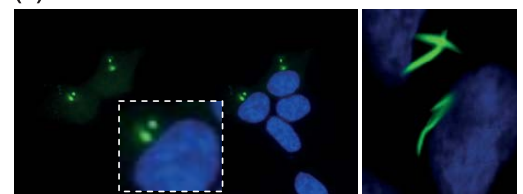
(2) EBV TK¹⁻²⁴³



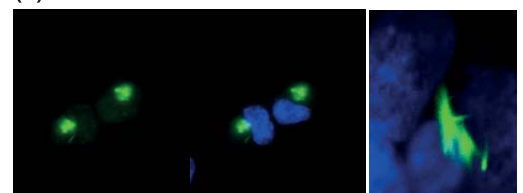
(3) EBV TK²⁴⁴⁻⁵⁶¹



(4) EBV TK²⁴⁴⁻⁶⁰⁷



(5) EBV TK²⁶⁶⁻⁶⁰⁷



Analysis of EBVTK Mutants. Epstein-Barr virus (EBV) thymidine kinase is both a nucleoside kinase and a deubiquitinating enzyme. Unlike most herpes virus proteins, it localizes to the centrosome (Panel 1). Study of these (Panels 2-5) and other mutants indicate it functions as a major regulator of the virus lytic cycle and is a potential target for antiviral therapy.



Roger Shapiro, MD, MPH, traveled to Botswana to study the efficacy of antiretroviral therapies on HIV infections.
Justin Ide, Harvard Staff Photographer

SELECTED PUBLICATIONS

D'Agata EMC, Webb GF, Horn MA, Moellering RC, Ruan S. Modeling the invasion of community-acquired methicillin-resistant *Staphylococcus aureus* into the hospital setting. *Clin Infect Dis* 2009; 48:274-84.

Eisenberg R, Pollock NR. Low yield of chest radiography in a large tuberculosis screening program. *Radiology* 2010; 256:998-1004.

Joukhadar C, Pillai S, Wennersten C, Moellering RC Jr, Eliopoulos GM. Lack of bactericidal antagonism or synergism in vitro between oxacillin and vancomycin against methicillin-susceptible strains of *Staphylococcus aureus*. *Antimicrob Agents Chemother* 2010; 54:773-7.

Kirby JE, Delaney M, Qian Q, Gold HS. Optimal use of Myco/F lytic and standard BACTEC blood culture bottles for detection of yeast and mycobacteria. *Arch Pathol Lab Med* 2009; 133:93-6.

Pillai SK, Wennersten C, Venkataraman L, Eliopoulos GM, Moellering RC, Karchmer AW. Development of reduced vancomycin susceptibility in methicillin-susceptible *Staphylococcus aureus*. *Clin Infect Dis* 2009; 49:1169-74.

Shapiro RL, Hughes MD, Ogwu A, Kitch D, Lockman S, Moffat C, Makhema J, Moyo S, Thior I, McIntosh K, van Widenfelt E, Leidner J, Powis K, Asmelash A, Tumbare E, Zwierski S, Sharma U, Handelsman E, Mburu K, Jayeoba O, Moko E, Souda S, Lubega E, Akhtar M, Wester C, Tuomola R, Snowden W, Martinez-Tristani M, Mazhani L, Essex M. A randomized comparison of antiretroviral regimens in pregnancy and breastfeeding in Botswana. *N Engl J Med* 2010; 362:2282-94.

Tan CS, Korolnik IJ. Progressive multifocal leukoencephalopathy and other disorders caused by JC virus: clinical features and pathogenesis. *Lancet Neurol* 2010; 9:425-37.

Wright SB, Ostrowsky B, Fishman N, Leon VM, Mucha AC, Mermel L, Perl TM. Hospital epidemiology and infection control roles expanding despite limited resources and compensation. *Infect Control Hosp Epidemiol* 2010; 31:127-32.

AWARDS AND HONORS

Sharon Wright MD, MPH, 2009 Robert M. Melzer Leadership Award for Leading Constructive Lasting and All-Embracing Change, Board of Directors, Beth Israel Deaconess Medical Center

Lori Panther, MD, Protocol Co-Chair, Microbicide Trials Network (MTN)-013/IPM026, Phase 1 Safety and Pharmacokinetics of Dapivirine/Maraviroc Vaginal Ring

Nira Pollock, MD, PhD, 2009 *Annals of Internal Medicine* Citation for Outstanding Review

Adolf Karchmer, MD, selected by the Infectious Diseases Society of America to receive its 2010 Clinician-Teacher Award

RESEARCH FUNDING

	Direct	Indirect
Federal	1,130,106	394,613
Non Federal	178,007	27,443

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