

◀ *P. falciparum* sporozoite in a mosquito midgut



Washington University in St. Louis  
SCHOOL OF MEDICINE

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### Calendar Highlights

**Infectious Diseases Society of St. Louis presents:**  
**Challenging Infectious Diseases Clinical Case Presentations**  
**Thursday, March 5, 2015**  
**Engineers' Club of St. Louis**  
**6:00 p.m. Hors d'oeuvres Reception**  
**7:00 p.m. Dinner/Program Commences**

[Click here for announcement.](#)

**3rd Annual Global Health & Infectious Diseases Conference**  
**Friday, April 10, 2015**  
**8:00 a.m. – 5:30 p.m.**  
**Eric P. Neumann Education Center**  
[http://cghid.wustl.edu/?page\\_id=207](http://cghid.wustl.edu/?page_id=207)

We are interested in your achievements, clinical and/or research activities, and other personal news since leaving Washington University School of Medicine. Please contact Dr. Gerald Medoff at [gmedoff@dom.wustl.edu](mailto:gmedoff@dom.wustl.edu) with any information you would like to share.  
 All division newsletters can be found at:  
 ID Division Newsletters

## Ebola Virus Disease Lessons Learned

Steven J. Lawrence, M.D., M.Sc.



Steven Lawrence, M.D., M.Sc.  
Assistant Professor of Medicine

The emergence, rapid spread, and ongoing transmission of Ebola Virus Disease (EVD) in West Africa have taught us many lessons about this deadly disease that was virtually unknown in the developed world before 2014: *EVD can cause very large, sustained epidemics.*

This outbreak, with 8000+ deaths and counting, is by far the worst in history for many reasons including introduction into a region unfamiliar with it, lack of healthcare infrastructure, simultaneous multi-national involvement and spread to more densely populated urban areas. The impact in Sierra Leone, Liberia, and Guinea

has been devastating. In addition to the human toll in terms of morbidity and mortality, substantial social and economic turmoil has ensued, threatening to disrupt what had been a promising decade of economic progress in these three developing countries. Despite the accelerated international response over the past several months, significant transmission continues in the region.

*EVD is often characterized by a tri-phasic presentation.* Symptoms start with a non-specific febrile illness resembling malaria (which can be a co-infection), followed by an often severe, cholera-like, gastroenteritis with massive GI fluid losses complicated by severe electrolyte disturbances and pre-renal azotemia. For those who do not recover after the GI phase, multi-organ failure and sepsis syndrome ensues. Severe hemorrhagic complications occur in a minority of patients.

*Aggressive supportive care may dramatically reduce the case fatality rate.* Advanced supportive measures, particularly intravenous hydration with careful monitoring and repletion of electrolytes, appears to improve survival from the overall case fatality rate of about 70% in West Africa, to less than 30% for patients treated in developed countries. It is unclear if the use of investigational drugs in these patients may have also contributed to improved survival.

*continued*

Above image (*P. Falciparum*): CDC/Dr. Mae Melvin (PHIL #2704), 1973. == Licensin). Masthead image: Ute Frevert; false color by Margaret Shear; Copyright: © 2005 Frevert et al.

## FEATURED COLLEAGUE



Nicholas Haddad M.D.

The memories of my ID fellowship still echo young in my mind and heart. I remember that intense apprehension of the first day I was on the “Red Team”, and the elation of the last day concluding an outstanding training. Those 2 days were bridged by an epoch full of team colors, ward anxieties, interesting bugs and patient stories that all swirled dizzily in a roller coaster style experience. . . ending blissfully to announce the start of a beautiful career.

Since completing my ID training in 2002, I went on to provide direct patient care at the Saginaw VA MC in Michigan as the only ID physician on faculty. There, I set up an infection control program from scratch and initiated de novo clinics for HIV and Hepatitis care. In 2006, I was promoted to become Chief of Medicine, an experience that has thereafter positively imprinted my medical career and changed the way I viewed organizational relationships in healthcare. In that capacity, I was responsible for an average of 50 providers of different specialties, care provision in outlying clinics around Northern Michigan (patient population of 27,000), and for the teaching of MSU (now CMU) medical residents. I continued to practice ID as the sole ID specialist on staff. During my time as Chief of Service, I focused on antibiotic stewardship, and geared the IC

*continued next column*

## Ebola virus continued

*Extensive training in infection prevention procedures is critical.* Epidemiologic studies of EVD outbreaks implicate direct contact with infected body fluids as the primary source of person-to-person transmission. However, given the large volumes of infectious fluids generated by patients in later stages of illness, personal protective equipment (PPE) must be used with meticulous care. As most U.S. healthcare workers (HCWs) are not accustomed to treating patients while wearing advanced PPE, training with demonstration of competency on correct PPE donning and doffing is paramount.

The first documented outbreak of EVD in West Africa has led to a devastating humanitarian crisis in the three involved countries. Ongoing transmission and an accelerated international response with volunteer HCWs means that exported cases from the region will likely continue to occur. We anticipate additional cases will either be evacuated to, or identified in, the United States. Preparedness for such an event is critical to mitigate the impact. Screening procedures focusing on recent travel history and symptoms is being undertaken at Washington University and Barnes-Jewish Hospital medical facilities similarly to most healthcare settings across the country. While sustained transmission in the U.S. is highly unlikely because of our public health and medical infrastructure, we must remain vigilant in order to quickly identify and isolate suspected cases.

.....  
*Nicholas Haddad, M.D. continued*

program to uphold national standards of MDRO control, improving on isolation practices and hand hygiene performance. During 2008-2010, our VA ranked among the top 5 VA medical centers nationwide. At the personal level, I certified in Infection Control (CIC) of which I am very proud, and was elected Fellow of the IDSA.

In 2012, we moved to Lebanon to be close to our extended families. Currently, I provide ID care at 4 medical centers, dispersed from Beirut on the Mediterranean reaching up to 1000 m (3,280 ft) above sea level. I am responsible for resident teaching, Infection Control, and other performance improvement activities. Patient cases are very interesting, ranging from travel-associated diseases (we get many tourists from the Gulf, Middle East and Africa), to management of local outbreaks such as Measles and Hep A (both compounded by the problem of the Syrian refugees in Lebanon). My wife is Chief of Pharmacy at a Beirut area teaching hospital for LAU (Lebanese American University).

We have three children, Eliot is now 14, Christya is 11, and Miriam 7. They continue to spice up our life and bring love out of our hearts every hour of the day. They have adjusted so remarkably well to the new culture in Lebanon and have excelled in their schools (tri-lingual; English, French, Arabic), although we all continue to miss the US so dearly. So we visit twice yearly, where we reconnect with friends and tour America the Beautiful. My wife and I provide needed care at our respective hospitals in Saginaw, Michigan during those short excursions back home to America.

# awards & announcements

## RECENT AWARDS

PRINCIPAL INVESTIGATOR(S)	AWARD	PROJECT TITLE
Hilary M. Babcock, M.D., M.P.H.	Centers for Disease Control and Prevention Safety and Healthcare Epidemiology Prevention Research Development (SHEPheRD) Program	Prevention and Control of Viral Respiratory Infections in Long Term Care Facilities: Detection, Vaccination and Infection Control Strategies
Michael S. Diamond, M.D., Ph.D.	Center for the Study of Immune Mechanisms of Flavivirus Control	CNS Inmate Immune Control of Encephalitic Flaviviruses
Michael S. Diamond, M.D., Ph.D.	NIH/NIAID	B-Cell Epitope Mapping of Viral and Parasitic Antigens
Michael S. Diamond, M.D., Ph.D.	NIH	Antiviral Drug Discovery and Development Center
Jeffrey P. Henderson, M.D., Ph.D.	Longer Life Foundation	Discovery of Urinary Tract Infection Biomarkers to Predict Longevity in the Elderly
Jennie H. Kwon, D.O.	Clinical Research Training Center Tuition Award Program	Postdoctoral Mentored Training Program in Clinical Investigation
Warren G. Lewis, Ph.D. Amanda L. Lewis, Ph.D.	NIH/NIAID R01	Roles of Sialidase in G. Vaginalis-Host Interactions During Bacterial Vaginosis
James P. White, Ph.D.	NIH Postdoctoral Fellowship (F32)	Mechanism of IFIT-Mediated Antiviral Effects

## special recognition

**William G. Powderly, M.D., FIDSA**, was elected Vice President of the Infectious Disease Society of America October 2014. He currently serves as a member of the Executive Committee and Board of Directors. The Vice President position will ultimately take on the roles of President-Elect (2015) and then President (2016) of the society.

## in memoriam

It is with tremendous sadness, that we announce the tragic and premature passing of Nur F. Önen, M.D., MCRP on November 11, 2014 in Münster, Germany. Nur was a former fellow and faculty colleague. She, and her husband Jörn C. Albring, M.D., Ph.D., moved to Germany with their two children in 2013 to be closer to family in Scotland, Turkey and Berlin while Jörn completed his hematology-oncology training.

Nur suffered a rapidly progressive illness for which there was no cure. She leaves behind her husband, Jörn (former fellow at Washington University School of Medicine) and children, Elaria (4) and Oscar (3). Nur was 38. The eight months following her diagnosis was met with her usual formidable energy, vitality, wit and humour.

The service for Nur was on December 8th in Pitlochry, Scotland where she grew up. Her family is planning a remembrance to celebrate Nur Önen in Pitlochry, June 19 - 21, 2015, that will include a hike up Pitlochry's local mountain, Ben Vrackie, followed by a BBQ.

Nur's twin sister, Alev Önen, has asked that people send pictures, stories, or videos to her at [alev\\_onen@hotmail.com](mailto:alev_onen@hotmail.com). Alev plans to create a book of memories for Nur's children when they grow older.

A fund for the children is being established. Meanwhile, if you would like to donate toward this effort, please write checks to Jörn C. Albring and mail to Alicia Cicerelli, Washington University School of Medicine, Campus Box 8051, 660 S. Euclid Ave., St. Louis MO. 63110



Nur F. Önen, M.D. with her children, Elaria and Oscar.



## Genome sequenced of enterovirus D68 circulating in St. Louis

Researchers at Washington University School of Medicine in St. Louis have sequenced the genome of enterovirus D68 sampled from patients treated at St. Louis Children's Hospital. Nationwide, the virus has spread rapidly in recent months and caused severe respiratory illness in young children, with some patients requiring hospitalization.

"Having the DNA sequence of this virus enables additional research," said senior author Gregory A. Storch, M.D., the Ruth L. Siteman Professor of Pediatrics. "It can be used to create better diagnostic tests. It also may help us understand why this epidemic seems to be producing severe and unusual disease, and why it's spreading more extensively than in the past."

The work appeared Oct. 28 in *Emerging Infectious Diseases*. The investigators published the DNA sequences in GenBank, an open-access database maintained by the National Institutes of Health (NIH).

The new sequencing data, produced by The Genome Institute at Washington University, includes one complete genome sequence and eight partial sequences taken from patient samples. Further, scientists at the Centers for Disease Control and Prevention (CDC) contributed to GenBank seven complete or partial sequences of enterovirus D68 sampled in the Midwest.



*Gregory Storch, M.D., led a team that sequenced the genome of enterovirus D68 circulating in St. Louis in recent months.*

Storch said routine laboratory tests can't identify specific enterovirus strains. Most hospitals and clinics only can perform tests to determine if a patient has a virus that fits broadly into the enterovirus/rhinovirus category. In the new study, Storch and his colleagues analyzed 14 patient samples testing positive for enterovirus/rhinovirus. Of those, nine were identified as enterovirus D68 using specialized laboratory techniques developed at Washington University and St. Louis Children's Hospital. The remaining five samples were other respiratory viruses.

While many children may contract enterovirus D68 and never know it because symptoms are mild, others may require hospitalization to support their breathing. Children with a history of breathing disorders such as asthma are at higher risk of severe disease.

In this study, seven of the nine patients with the D68 strain had severe disease that required admission to the pediatric intensive care unit. The remaining two had moderate symptoms resulting in general hospital admission. Of the five patients with other viruses, three were classified with severe disease. The only two patients discharged home with mild disease did not have the D68 strain.

"There is currently no specific treatment and no vaccine for this virus," said Storch, who treats patients at St. Louis Children's Hospital. "But having the DNA sequence available helps work toward both of those goals."

The data also allow comparisons between strains circulating in different parts of the country. "The CDC has published some additional genomes from Missouri, Illinois and Kentucky," said first author Kristine M. Wylie, Ph.D., research instructor in pediatrics. "The Missouri genomes, including ours, are all very similar, but the Illinois and Kentucky genomes are different from the Missouri types, suggesting there are some distinct strains circulating in the U.S. right now."

Wylie also pointed out the importance of continuing to characterize the genetic features of this virus and monitor the health of patients with the D68 strain.

"Until recently, this virus has been pretty rare," she said. "It would be helpful to have more data about the virus and the patients so that we can start to associate the genetic features of the virus with the severity of the disease."

Parts of this article are reprinted with permission, Julia Evangelou Strait, "Washington University Record", Genome sequenced of enterovirus D68 circulating in St. Louis, *October 28, 2014*

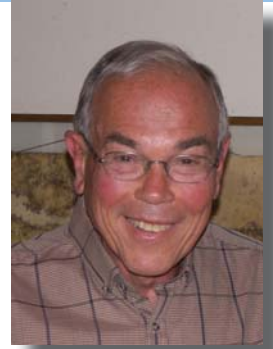
# supporting the ID Division

## Dr. Gerald Medoff Lectureship Infectious Diseases Fund

Dr. Gerald Medoff has been among the most influential leaders in the School of Medicine in the past half century, and the contributions of Dr. Medoff to the field of medicine are clearly reflected in the quality of the School and in the extraordinary individuals he has mentored.

We believe that you share our sense of pride in what we have been able to build, much of which is due to the leadership of Dr. Medoff. Please consider an unrestricted gift to the Division that will be used to honor Dr. Medoff with an annual lectureship.

Gerald Medoff, M.D.  
Emeritus Professor of Medicine



## Thank You to Our Supporters *Gerald Medoff, M.D. Lectureship Infectious Diseases*

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Thomas H. Steinberg, M.D.

## In Memoriam

The Infectious Diseases Division is establishing a prize in Tom Steinberg's honor that will be awarded annually. Contributions can be made to this Memorial Award by donating to the

### **Thomas H. Steinberg Memorial Trainee Award**

Dr. Erik R. Dubberke

Dr. Paul W. Spearman

## *Your Donations Are Greatly Appreciated!*

To make a gift to the Infectious Diseases Division, please contact Dan Korte, Division Administrator, Infectious Diseases Division or mail your contribution to Dan, designating where you would like us to direct your gift:

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