



Boonshoft  
School of Medicine  
WRIGHT STATE UNIVERSITY

## INFECTIOUS DISEASES NEWSLETTER

Nov 2017

T. Herchline, Editor

### LOCAL NEWS

#### **ID Fellows**

Dr Alpa Desai will be at Miami Valley Hospital in November and December, and at the VA Medical Center in January. Dr Luke Onuorah will be at Miami Valley Hospital in November and December, and on Research in January. Dr. Najmus Sahar will be at the VA Medical Center in November and December, and at MVH in January.

### NATIONAL NEWS

Contributed by Najmus Sahar, MD

#### **New Shingles Vaccine Approved**

On October 20, 2017, the U.S. Food and Drug Administration (FDA) licensed Shingrix® for adults aged 50 years and older to prevent shingles. On October 25, 2017, the Advisory Committee on Immunization Practices (ACIP) voted that Shingrix® is:

- recommended for healthy adults aged 50 years and older to prevent shingles and related complications
- recommended for adults who previously received the current shingles vaccine (Zostavax®) to prevent shingles and related complications
- The preferred vaccine for preventing shingles and related complications

Once approved by the CDC director, these ACIP recommendations will be published in the Morbidity and Mortality Weekly Report. At that time, the recommendations will become official policy. Zostavax® was licensed by the FDA in 2006. This vaccine reduces the risk of developing shingles by 51% and PHN by 67%

#### **Bourbon Virus in Missouri**

A new case of the still-mysterious Bourbon virus was confirmed in Missouri, likely originating within the state, local authorities said in a June 30 press release. Bourbon virus (named for Bourbon County in Kansas where it was first found) was identified in 2015 as a Thogotovirus. Others in the genus are tick-borne, which gives credence to the idea that Bourbon virus is as well. The infected patient had not traveled out of Missouri recently, indicating the patient likely caught the virus in the state. They were bitten by a tick while visiting Maramec State Park in Missouri soon before becoming ill, and ticks at the park have tested positive for Bourbon virus. CDC and Missouri Department of Health and Senior Services officials are investigating to determine health risks and to enable improved testing for the illness. They are currently looking for any other cases and collecting ticks in Missouri to test for Bourbon virus. Symptoms of the infection include fever,

nausea and vomiting, fatigue, headaches and body aches, and rash. Blood tests of previous cases also showed low levels white blood cells and platelets.

### **Aspirin Reduces Liver Cancer Risk in Patients with Hepatitis B**

Daily aspirin may reduce the risk of liver cancer for people with hepatitis B infection, a new study suggests. Hepatitis B virus attacks the liver and can cause cirrhosis and liver cancer. Previous research suggests daily low-dose aspirin therapy may prevent cancer, but there was little clinical evidence on whether regular aspirin use can prevent liver cancer in people with hepatitis B. Researchers from Taiwan analyzed data from close to 205,000 patients with chronic hepatitis B. They found that those on daily aspirin were much less likely to develop liver cancer over five years than those who did not take aspirin. The findings were scheduled to be presented at the American Association for the Study of Liver Diseases meeting in Washington, D.C.

#### **INTERNATIONAL NEWS** Contributed by Alpa Desai, MD

### **Pneumonic Plague Outbreak in Madagascar**

Plague is endemic on the Plateaux of Madagascar, including Ankazobe District, where the current outbreak originated. A seasonal upsurge, predominantly of the bubonic form, usually occurs yearly between September and April. Since August 2017, Madagascar is experiencing a large outbreak of pneumonic plague affecting major cities and other non-endemic areas. From 1 August through 30 October 2017, a total of 1801 confirmed, probable and suspected cases of plague, including 127 deaths, have been reported by the Ministry of Health of Madagascar to WHO. Of these, 1111 (62%) were clinically classified as pneumonic plague, including 257 (23%) confirmed, 374 (34%) probable and 480 (43%) suspected cases. In addition to the pneumonic cases, 261 (15%) cases of bubonic plague, one case of septicaemic plague and 428 cases (24%) where the type has not yet been specified, have been reported. As of 30 October, 51 of 114 districts of Madagascar have been affected. Since the beginning of the outbreak, 71 healthcare workers have had illness compatible with plague, none of whom have died. Laboratory confirmation of plague is being conducted by the Institut Pasteur of Madagascar. Twenty-three isolates of *Yersinia pestis* have been cultured and all are sensitive to antibiotics recommended by the National Program for the Control of Plague. The Ministry of Public Health of Madagascar has activated crisis units in Antananarivo and Toamasina and all cases and contacts have been provided access to treatment or prophylactic antibiotics at no cost.

### **Marburg Virus Disease Outbreak in Uganda**

Marburg virus disease (also known as Marburg hemorrhagic fever) is an emerging and highly virulent epidemic-prone disease associated with high case fatality rates (case fatality rate: 23–90%). The virus is transmitted by direct contact with the blood, body fluids and tissues of infected persons or wild animals. On 17 October 2017, the Ugandan Ministry of Health notified WHO of a confirmed outbreak of Marburg virus disease in Kween District, Eastern Uganda. As of 24 October, five cases have been reported – one confirmed case, one probable case with an epidemiological link to the confirmed case, and three suspected cases including two health workers. The first case-patient (probable case) reported was a male in his 30s, who worked as a game hunter and lived near a cave with a heavy presence of bats and was admitted to a local health centre with high fever, vomiting and diarrhea, and did not respond to antimalarial treatment. He was transferred to the referral hospital in the neighboring district, where he died the same day. No samples were collected. He was given a traditional burial, which was attended by an estimated 200 people. The sister (confirmed case) of the first case-patient nursed him and

participated in the burial rituals. She became ill and was admitted to the same health center on 5 October 2017 with fever and bleeding manifestations. She was subsequently transferred to the same referral hospital, where she died. Posthumous samples were collected and sent to the Uganda Virus Research Institute (UVRI). On 17 October, Marburg virus infection was confirmed at UVRI by RT-PCR and it was immediately notified to the Ministry of Health. Subsequent cases also have reported contact with first confirmed case and are under investigation with pending laboratory results to rule out Marburg virus disease. Contact tracing and follow-up activities have been initiated. As of 23 October, 155 contacts including 66 who had contact with the first case and 89 who had contact with the second case-patient have been listed in the two affected districts, including 44 health care workers. The number of family and community contacts is still being investigated.

### **Legionnaires Disease Outbreak in Spain**

A Legionnaires' disease outbreak has been detected in Palmanova, Mallorca, Spain. As of 26 October, 21 travel-associated cases were reported with onset dates from 11 September to 7 October 2017. An additional case of Legionnaires' disease is reported concerning an employee at a hotel not associated with any travel-associated Legionnaires disease (TALD) case. The cases, twelve men and nine women, are between 46 and 87 years old and were in Palmanova two to ten days before falling ill. The 21 travel-associated cases stayed in seven accommodations in Palmanova. One accommodation is associated with nine cases; two accommodations are associated with three cases each. Two hotels are associated with two cases each. Two cases stayed in hotels in Palmanova not associated with other cases. The majority of travel-associated cases are from the United Kingdom (17 cases), but cases are also from France (two cases), the Czech Republic (one case) and Denmark (one case). The clustering of TALD cases in this short time and the involvement of several accommodation sites indicate a community outbreak. The case reported in a local resident working in a hotel not previously identified among the travel-associated cases is a further indicator of this being a community outbreak in a limited geographical area of Palmanova.

## CASE CONFERENCE

Contributed by Luke Onuorah, MD

A 66-year-old black man presented to the emergency department with a one-day history of fever, 5-day history of maculopapular rashes and sores of his lower lip. The rash started on both arms and spread to his abdomen, after he had taken an over-the-counter preparation of acetaminophen 325 mg, dextromethorphan HBr 10 mg, phenylephrine HCl 5 mg for nasal congestion. He recorded a temperature of 103 F at home, but denied chill and rigors. He denied any cough, rhinorrhea, red eyes. He denied previous history of herpes simplex stomatitis. He had a past medical history of hypertension, type II diabetes mellitus, obesity, hyperlipidemia, coronary artery disease (CAD), gouty arthritis, childhood chicken pox, childhood rheumatic fever, heart murmur. He previously underwent percutaneous coronary intervention with stent placement for CAD. Home medications at admission were as follows: aspirin, allopurinol (which was commenced five weeks prior to skin rash and fever), atorvastatin, carvedilol, clopidogrel, nifedipine extended release and, valsartan-hydrochlorothiazide. He endorsed an allergy to sulfonamides (but could not recall what it was). He is in retirement, lives with his wife at home, and denies alcohol, tobacco or recreational drug abuse. He denied any household pets, recent travel or sick contact.

Vital signs on admission: temperature: 99.5 F; blood pressure: 114/51; pulse: 98 beats per minute; respiratory rate: 18 cycles per minute; pulse oximetry: 98% while breathing ambient air. He weighed 325 lbs. He was comfortable and not in acute respiratory or painful distress. Significant findings were: ulcers on the lower lip with surrounding erythema and swelling of his lower face; non-tender cervical lymphadenopathy and maculo-papular rashes over his trunk and both upper extremities. There were clear breath sounds on chest auscultation, and abdominal palpation was benign. However, he had bilateral chronic lymphedema which was not a source of concern.

Baseline laboratory tests were obtained, the following values were abnormal: Eosinophils 2.8%, AST- 167 IU/ml, ALT- 167 IU/ml, alkaline phosphatase- 306 IU/m, direct bilirubin-1.2 mg/dL. The elevation of these values led to a CT of the abdomen and pelvis with contrast that revealed hepatic steatosis but no gallstones or congestion. A provisional diagnosis of facial cellulitis was made; intravenous vancomycin and piperacillin-tazobactam were administered. Following an infectious diseases consultant evaluation, the diagnoses of possible drug reaction to acetaminophen 325 mg, dextromethorphan HBr 10 mg, phenylephrine HCl 5 mg was made. Possible differential diagnoses of streptococcal pharyngitis, herpes simplex stomatitis were considered. Piperacillin-tazobactam was discontinued. Rapid streptococcal antigen test was negative, and subsequent throat swab culture had a light growth of Group F Streptococcus. Herpes simplex virus-1 (HSV-1), HSV-2, Varicella zoster virus RT-PCR were negative. Unfortunately, his liver function enzymes and direct bilirubin continued to rise. The patient was transferred to a tertiary care facility, where he was evaluated by gastro-enterology service. An assessment of Drug reaction with eosinophilia, and systemic symptoms (DRESS), secondary to allopurinol administration was made. Allopurinol was immediately stopped and listed as an allergy, however, he continued to show a remitting-relapsing clinical course as he had to be moved to the ICU twice for hypotension. Four sets of blood culture were negative for bacterial growth. Furthermore, other tests were ordered to assess for contributing factors to his transaminitis and cholestatic jaundice. Hepatitis A, B and C serology, Epstein Barr Virus DNA PCR, Cytomegalovirus DNA PCR were all negative, but qualitative Human Herpes Virus-6 (HHV-6) PCR was positive. The patient's alkaline phosphatase peaked at 1220 IU/ml, and direct bilirubin at 14 mg/dL. He was a poor candidate for liver transplant, and a decision was made to treat him with ganciclovir owing to a positive HHV-6 PCR. Ganciclovir was discontinued after 4 days due to a negative HHV-6 PCR. High dose intravenous methyl-prednisolone was administered and within 48 hours there was a decline in his alkaline phosphatase, ALT and AST values. He was discharged home after a 26-day hospital stay with a prescription of oral steroids.

## Discussion

Drug reaction with eosinophilia and systemic symptoms (DRESS), which is also termed drug-induced hypersensitivity syndrome (DiHS) by Japanese experts, is one of the drug-induced severe cutaneous adverse reactions (SCARs)(1). It has an estimated overall population risk of between 1 in 1000 and 1 in 10,000 drug exposures (2,3). With an estimated mortality rate of 10%, it is a serious condition that presents a diagnostic challenge to clinicians (4). This condition is characterized by fever, widespread skin lesions, internal organ involvement (commonly liver), a prolonged and protracted clinical course, a long latent period after intake of the inciting drug, and possible sequential reactivation of various human herpes viruses (5). Invariably, the presence of fever and skin rash raises the suspicion of viral exanthems, hence, infectious diseases consultants are typically asked to evaluate such patients. A number of infectious causes are entertained such as: cellulitis, folliculitis, impetigo, bullous impetigo, herpes simplex stomatitis, herpes zoster, small pox, chicken pox, hand-foot-and-mouth disease, eczema vaccinatum, Kaposi's varicelliform eruption. Non-infectious causes such as bullous pemphigoid, bullous lupus erythematosus, pustular psoriasis, and immune-mediated vasculitis could present like this as well. Available evidence shows that DRESS syndrome tends to occur in genetically predisposed persons who ingest inciting drugs. The role of HHV-6 in the aetio-pathogenesis of the condition remains controversial, but it has been shown that the reactivation of HHVs and subsequent anti-viral immune responses may also contribute to a higher severity and more protracted course of DRESS (6). The condition is treated with the immediate withdrawal of the inciting agent. Corticosteroids started at a dose equivalent to 0.5-1.0 mg/kg/day with gradual tapering over 2-3 months has been suggested (7,8). Further research is needed to examine the role of HHV-6, and the need to treat with anti-viral agents. DRESS/DiHS should be considered when patients are being evaluated with fever and rash.



## References

1. Phillips EJ, Chung WH, Mockenhaupt M, Roujeau JC, Mallal SA. Drug hypersensitivity: Pharmacogenetics and clinical syndromes. *J. Allergy Clin. Immunol.* 2011; 127, S60-S66
2. Chiou CC, Yang LC, Hung SI, Chang YC, Kuo TT, Ho HC, Su S, Hong HS, Chung WH. Clinicopathological features and prognosis of drug rash with eosinophilia and systemic symptoms: A study of 30 cases in Taiwan. *J. Eur. Acad. Dermatol. Venereol.* 2008; 22:1044-1049.
3. Shiohara T, Kano Y. Review of drug induced hypersensitivity: Special emphasis on drug-induced hypersensitivity syndrome. *Expert Dermatol.* 2012; 7: 539-547.
4. Chen YC, Chiu HC, Chu CY. Drug reaction with eosinophilia and systemic symptoms. A retrospective study of 60 cases. *Arch. Dermatol.* 2010; 146: 1373-1379.

5. Cacoub P, Musette P, Descamps V, Meyer O, Speirs C, Finzi L, Roujeau JC. The DRESS syndrome: A literature. *Am. J. Med.* 2011; 124: 588-597.
6. Cho YT, Yang CW, Chu CY. Drug reaction with eosinophilia and systemic symptoms (DRESS): An interplay among drugs, viruses and immune system. *Int. J. Mol. Sci.* 2017; 18: 1243-1263.
7. Husain Z, Reddy B, Schwartz RA, DRESS syndrome part 1. Clinical perspectives. *J. Am. Acad. Dermatol.* 2013; 68: 693.e1-639.e14.
8. Shiohara T, Kano Y. Drug reaction with eosinophilia and systemic symptoms (DRESS): Incidence, pathogenesis, and management. *Expert Opin. Drug Saf.* 2017;16:139-147.

## **Adaptation of Telehealth into Infectious Disease Practice**

Contributed by Ashley Trent (UD Student, PHDMC Intern)

Challenges in providing affordable and quality health care have continuously increased over the past several years requiring new strategies for health care delivery. New developments in telehealth, telemedicine, and mobile health (mhealth) are rapidly emerging; and have the potential to meet the growing demands of healthcare if implemented efficiently. The Infectious Diseases Society of America (IDSA) has recently published a position statement on the adoption of these technologies by infectious diseases (ID) physicians. According to the IDSA's statement they support, "appropriate evidence-based use of telehealth and telemedicine technologies to provide up-to-date, timely, cost-effective subspecialty care to resource-limited populations and to provide continuing education and longitudinal support to ID physicians." (Siddiqui et al., 2017)

Although telehealth and telemedicine are often used interchangeably, telehealth refers to a broader range of remote healthcare which can include non-clinical and clinical services, whereas telemedicine refers to remote clinical care. According to the Health Resources Services Administration (HRSA) telehealth is defined as "the use of electronic information and telecommunications technologies to support long-distance clinical health care, patient and professional health-related education, public health and health administration. Technologies include videoconferencing, the internet, store-and-forward imaging, streaming media, and terrestrial and wireless communications." (Siddiqui et al., 2017) Similarly, telemedicine refers to a remote interaction between a physician and patient typically through audio-video technologies which provide a real time, encrypted, HIPPA compliant communication. Mhealth, or mobile health, refers to the delivery of health care services using a mobile device. This area of telehealth is still developing, but has shown usefulness in monitoring medication compliance, as well as disease and medication side effects.

There are various possibilities for the implementation of technology in clinical care. Two of the main applications are using a live video conference for two way simultaneous communication between a patient and a provider at a remote location, as well as asynchronous communication in which the patient stores data then forwards it to their health provider. Synchronous telemedicine requires a high resolution video camera, and the videoconference must be encrypted using HIPPA compliant software. Asynchronous telemedicine is currently being used in dermatology and radiology in which the specialist is able to review high-definition images at a distant site. This store and forward technology can be adapted to ID consultation, allowing the physician to review clinical data, images, and laboratory and culture data remotely. Implementing these strategies allows providers to treat a larger amount of patients more quickly, while decreasing the cost of care. In addition, telemedicine allows patients in rural areas to have access to specialist care that they would otherwise have to travel hours to see. This is often impractical, and increases the cost of healthcare through transportation costs, and the loss of productivity that results from being away from work and other activities.

The implementation of telehealth also makes it possible to increase preventative medicine, which can help to decrease hospital admissions and health complications, which collectively contribute to lowering health care costs. For instance by utilizing mhealth, cell phone applications can be used to track medications, and aid patients in monitoring their own health. The information gathered from these apps can then be forwarded to their health care provider to track their medication adherence, and monitor their data to anticipate complications and intervene early. Telehealth could be used to increase adherence by using an internet connected pill cap to remind patients to take their medication, and send a report to the physician with an adherence report and notifications to refill medications. Mhealth can be applied to ID practice through utilizing applications for video directly observed therapy (VDOT) for Tuberculosis patients. Specifically, store and forward applications would allow providers to review videos at a convenient time, and reduce the time and resources required for nurses to travel to these patients' homes for DOT. A study conducted in two local health jurisdictions in Washington State found that using VDOT resulted in an

estimated average cost savings per patient of \$2,448, with almost \$140,000 saved in travel and staff costs over a four year time frame. (Krueger et al., 2010)

Furthermore, telemedicine clinics can be implemented to reach vulnerable populations in rural areas or facilities that lack subspecialty care. A study conducted by Young et al. (2014) used telehealth to provide specialty consultations to HIV positive inmates. Persons held in U.S. correctional facilities have a HIV prevalence that is three times higher than the general population, and represent a high risk population. In addition, HIV management in correctional facilities is usually suboptimal as many correctional physicians are not trained in complex HIV management, and the remote location of most prisons prevents transport to clinics with specialty care. In their study, they utilized a telemedicine clinic to facilitate a visit with an infectious disease physician, an infectious disease-trained pharmacist, and a case manager. When compared to a cohort of inmates prior to the telemedicine intervention, they found that the telemedicine cohort has a significantly greater proportion of patients with virologic suppression and lower community HIV viral load, markers for appropriate antiretroviral therapy, and patient compliance.

Another useful application of telehealth is consultation for refugee populations. A study conducted in Australia by Schulz et al. (2014) implemented an infectious disease telehealth clinic at a tertiary hospital; most of the patients were recently arrived refugees. They were able to successfully develop the telehealth clinic which managed a range of complex medical conditions. The use of telehealth consultations was most useful for follow up of discharged hospital patients, and regular outpatient appointments. Many of the patients required in person consultation in addition to the telehealth consultations to manage their health. The use of a telehealth clinic allowed the providers to provide higher quality healthcare to the refugee patients through including an interpreter in the consultations, which would be difficult to include on site in rural areas.

Implementing telehealth and telemedicine into routine care will allow physicians and nurses to treat more patients while maintaining, and possibly improving quality of care while decreasing unnecessary costs. There are a variety of possibilities for the implementation of telemedicine from tracking medication adherence, empowering patients to self-monitor their illnesses, and providing specialty care to vulnerable patients in rural areas such as inmates and refugees. As technology rapidly expands in all areas of our lives, it seems that integrating technology into health care is a natural progression in the field. Telehealth and telemedicine are a cost-effective strategy to address provider shortages, and the increasing complexity of managing patient care.

#### **References:**

1. Krueger, K., Ruby, D., Cooley, P., Montoya, B., Exarchos, A., Djojonegoro, B. M., & Field, K. (2010). Videophone utilization as an alternative to directly observed therapy for tuberculosis. *The International Journal Of Tuberculosis And Lung Disease: The Official Journal Of The International Union Against Tuberculosis And Lung Disease*, 14(6), 779-781.
2. Schulz, T. R., Richards, M., Gasko, H., Lohrey, J., Hibbert, M. E., & Biggs, B. (2014). Telehealth: experience of the first 120 consultations delivered from a new refugee telehealth clinic. *Internal Medicine Journal*, 44(10), 981-985.
3. Siddiqui, J., Herchline, T., Kahlon, S., Moyer, K. J., Scott, J. D., Wood, B. R., & Young, J. (2017). Infectious Diseases Society of America Position Statement on Telehealth and Telemedicine as Applied to the Practice of Infectious Diseases. *Clinical Infectious Diseases: An Official Publication Of The Infectious Diseases Society Of America*, 64(3), 237-242.
4. Young, J. D., Patel, M., Badowski, M., Mackesy-Amity, M. E., Vaughn, P., Shicker, L., & ... Ouellet, L. J. (2014). Improved virologic suppression with HIV subspecialty care in a large prison system using telemedicine: an observational study with historical controls. *Clinical Infectious Diseases: An Official Publication Of The Infectious Diseases Society Of America*, 59(1), 123-126.



**Bug of the Quarter**  
By: W. Grant Starrett, M.D.

This article reviews the more obscure organisms which are less commonly isolated in clinical specimens. Please contact me at [wgstarrett@premierhealth.com](mailto:wgstarrett@premierhealth.com) if you come across an isolate that may fit in this category.

**Organism:** *Helcococcus*

**Clinical Data:** An 81-year-old female with history of hypertension and hypercholesterolemia presented with a large bulla on the plantar surface of her right foot and was admitted for cellulitis. The patient reported having an itchy rash on the bottom of her right foot and started scratching it about a week prior to admission. She was subsequently seen at an urgent care when a blister formed at the site of the rash, and was placed on cephalexin and triamcinolone cream. While accompanying a family member to the emergency room, she decided to get it re-evaluated, since it had not gotten any better with the previously prescribed treatment. She denied fever or chills, and had no pain unless she was walking directly on it. The patient was placed on broad spectrum antibiotics upon admission, and podiatry and infectious diseases services were consulted. ID recommended observation off antibiotics, but podiatry recommended surgical debridement due to concern for a foot abscess. Operative findings were significant for wet gangrenous tissue, along with a sinus tract extending to deep tissues in associated with mucopurulent fluid. All devitalized tissue was excised and the wound was packed open. Interestingly, the Gram-stains of all surgical cultures demonstrated no white blood cells, and preliminary culture results were without growth at the time of discharge. She was treated with a ten-day course of doxycycline upon discharge, and the surgical wound had completely healed at the time of follow-up one month later. Surgical cultures grew only *Helcococcus*.

**Taxonomy**

Kingdom: Bacteria  
Subkingdom: Posibacteria  
Phylum: Firmicutes  
Class: Tissierellia  
Order: Tissierellales  
Family: Peptoniphilaceae  
Genus: *Helcococcus*

**Associated Diseases:**

1. Wound infections
2. Prosthetic implant infections
3. Abscess
4. Bacteremia
5. Endocarditis

**Description:**

*Helcococcus* is a genus of facultative anaerobes that colonize the skin and have staphylococcal morphology (*ie*, arranged in groups, clusters or tetrads). They are slow-growing, tiny gray, non-hemolytic or slightly alpha-hemolytic gram-positive cocci that grow best in anaerobic conditions. The organism is often isolated from the skin and wounds of the lower extremities, regardless of whether the wound is infected. Because it resembles other more well-known clinical isolates, it may have been misidentified or overlooked in clinical cultures in the past. Although this organism may function as an opportunist in a mixed infection,

it has been isolated in pure culture from wound infections and sterile body sites, including the blood and abscess fluid. It is commonly penicillin, ampicillin and vancomycin susceptible.

**Resources:**

1. Caliendo AM, *et al.* Helcococcus, a New Genus of Catalase-Negative, Gram-Positive Cocci Isolated from Clinical Specimens. J Clin Microbiol. June 1995, vol. 33 no. 6; 1638-1639.
2. Koneman's Color Atlas and Textbook of Diagnostic Microbiology, 6<sup>th</sup> ed.
3. Lotte R, *et al.* Infectious endocarditis caused by *Helcococcus kunzii* in a vascular patient: a case report and literature review. BMC Infectious Diseases. June 2015, 15:238.
4. Mandell, *et al.* Principles and Practice of Infectious Diseases, 6<sup>th</sup> edition.
5. Murray, *et al.* Manual of Clinical Microbiology, 7<sup>th</sup> edition.
6. [www.uniprot.org/taxonomy](http://www.uniprot.org/taxonomy)
7. Vergne A, *et al.* Identification and Clinical Significance of *Helcococcus kunzii* in Human Samples. J Clin Microbiol. August 2015, vol. 53 no. 8; 2703-2705

## Upcoming Events

### November 2017

|   |                           |                  |
|---|---------------------------|------------------|
| 8 | Journal Club              | MVH 6NW          |
|   | Case Conference cancelled | MVH Maxon Parlor |

### December 2017

|    |                           |                  |
|----|---------------------------|------------------|
| 13 | Journal Club              | MVH 6NW          |
|    | Case Conference cancelled | MVH Maxon Parlor |

### January 2018

|    |                 |                  |
|----|-----------------|------------------|
| 10 | Journal Club    | MVH 6NW          |
| 31 | Case Conference | MVH Maxon Parlor |

### February 2018

|    |                 |                  |
|----|-----------------|------------------|
| 14 | Journal Club    | MVH 6NW          |
| 28 | Case Conference | MVH Maxon Parlor |

### March 2018

|     |  |                  |
|-----|--|------------------|
| 4-7 | Conference on Retroviruses and Opportunistic Infections<br><a href="http://www.croiconference.org/">http://www.croiconference.org/</a> | Boston, MA       |
| 14  | Journal Club   | MVH 6NW          |
| 28  | Case Conference  | MVH Maxon Parlor |

### April 2018

|       |  |                  |
|-------|--|------------------|
| 11    | Journal Club   | MVH 6NW          |
| 18-20 | Society for Healthcare Epidemiology<br><a href="http://sheaspring.org">http://sheaspring.org</a>       | Portland, OR     |
| 21-24 | European Congress of Clin Micro & Inf Dis<br><a href="http://www.eccmid.org">http://www.eccmid.org</a> | Madrid, Spain    |
| 25    | Case Conference  | MVH Maxon Parlor |

### May 2018

|    |                 |                  |
|----|-----------------|------------------|
| 9  | Journal Club    | MVH 6NW          |
| 30 | Case Conference | MVH Maxon Parlor |

### June 2018

|      |  |                  |
|------|--|------------------|
| 7-11 | ASM Microbe (ASM General Meeting & ICAAC)<br><a href="http://asmmicrobe.org">http://asmmicrobe.org</a> | Atlanta, GA      |
| 13   | Journal Club   | MVH 6NW          |
| 27   | Case Conference  | MVH Maxon Parlor |

### July 2018

|    |                 |                  |
|----|-----------------|------------------|
| 11 | Journal Club    | MVH 6NW          |
| 25 | Case Conference | MVH Maxon Parlor |