



Boonshoft  
School of Medicine  
WRIGHT STATE UNIVERSITY

## INFECTIOUS DISEASES NEWSLETTER

**August 2014**

[T. Herchline, Editor](#)

### **LOCAL NEWS**

#### **ID Fellows**

Dr. Katelyn Booher will be at the VA Medical Center August-September and at Miami Valley Hospital in October. Dr Shruti Patel will be at Miami Valley Hospital August-September and at the VA Medical Center in October.

#### **Local Disease Activity**

The Ohio Department of Health's (ODH) statewide surveillance has identified Ohio's first individual infected with LaCrosse virus this year, and several potential cases are under investigation. While no cases of West Nile virus have been reported yet, infection rates in mosquitoes are increasing and we are entering the peak season for arbovirus transmission in Ohio. To ensure that all cases of arbovirus are detected, ODH would like to recommend that healthcare providers test for arboviral infections in patients that are diagnosed with viral meningitis and encephalitis. The arboviral testing panel that is recommended for consideration in Ohio patients with viral meningitis or encephalitis includes LaCrosse virus, St. Louis encephalitis virus, and West Nile virus. Contact the ODH's Bureau of Infectious Diseases at 614-995-5599 if you have questions. Up to date information can be found on the ODH website at: [www.odh.ohio.gov/mosquitoes](http://www.odh.ohio.gov/mosquitoes).

The Ohio Department of Health requests that certain bacterial isolates of public health importance be sent to the ODH Laboratory or CDC for serotyping and/or pulsed-field gel electrophoresis (PFGE). Identification, including serogrouping, serotyping, and pulsed-field gel electrophoresis (PFGE) is performed on all Salmonella and Shiga toxin-producing E. coli. PFGE is performed as needed on Neisseria meningitidis, Shigella, Campylobacter, Vibrio spp. and Yersinia enterocolitica. Confirmation of identification and PFGE are performed on all isolates of Listeria monocytogenes. A full description of the microbiology services available can be found in the ODH Laboratory, Microbiology Customer Services Manual at: <http://www.odh.ohio.gov/pdf/IDCM/sect4TOC.pdf>. ODH would very much appreciate receiving the following isolates and ask you to send them to ODH Laboratory: STEC isolates (Shiga-like toxin producing E. coli O157 and non-O157), Mycobacterium tuberculosis complex isolates for genotyping (please specify if susceptibility testing is being requested in addition to genotyping), Neisseria meningitidis from normally sterile sites, Salmonella spp. isolates, Vibrio spp. isolates, Haemophilus influenzae from normally sterile sites in persons <5 years of age. Submit isolates with ODH Microbiology form HEA 2530; you can find the form at: <http://www.odh.ohio.gov/pdf/IDCM/frm2530.pdf>.

### **NATIONAL NEWS**

Contributed by Shruti Patel, MD

**FDA approves Sivextro to treat skin infections.**

As of June 20, 2014, FDA has approved Sivextro (tedizolid phosphate) to treat acute bacterial skin and skin structures infections caused by staphylococcus aureus, (including MRSA), streptococcus and enterococcus faecalis. It belongs to oxazolidinone group of antibiotics following linezolid. In two randomized double blind clinical trials sivextro was as effective as linezolid for the skin infections. Drug is available as 200 mg tablet or IV formulations. It is administered once daily for 6 days. Most common side effects include nausea, vomiting, diarrhea, headache and dizziness. It is not advised to use in patients with neutropenia.

### **First Chikungunya Case Acquired in US Reported in Florida.**

As of July 17,2014, first locally acquired case of chikungunya was reported in Florida. Virus is spread by two species of mosquitoes which are prevalent in central and south america and caribbean territories. Illness is commonly seen in travelers who visit outside US. To date 243 travel associated cases had been reported so far. However the very first acquired case in florida raised concern about increasing risk. people infected with the virus typically has fever, joint pain and swelling. Virus does not spread from person to person. However there is no specific treatment or prophylaxis available. Best way to protect is to avoid mosquitoes!

### **Lyme Disease Testing**

Beginning September 15, 2014, a written notice must be given to every patient when ordering a test for Lyme disease. The notice must be signed by the patient or patient's representative and kept in the patient's record. The purpose of the form is to make patients aware of the difficulty in diagnosing Lyme disease. The form states, in part "Current testing for Lyme disease can be problematic and may lead to false results. If you are tested for Lyme disease and the results are positive, this does not necessarily mean that you have contracted Lyme disease. In the alternative, if the results are negative, this does not necessarily mean that you have not contracted Lyme disease. The form is available at: [http://med.ohio.gov/pdf/Newsletters/Lyme\\_Disease\\_Form.pdf](http://med.ohio.gov/pdf/Newsletters/Lyme_Disease_Form.pdf)

## **INTERNATIONAL NEWS**

### **World's First Malaria Vaccine Could Be Just a Year Away**

As of July 30,2014 researcher had showed promising results for new malaria vaccine. UK based pharmaceutical company GlaxoSmithKline had applied for formal regulatory approval. It is the first malaria vaccine to reach to this stage. A study showed that of 1000 people who received vaccine, 800 cases of malaria were prevented. Immunity lasted for around 18 months. Every year 800,000 people die from malaria and most of them are children in Africa. If This vaccine is successful can surely provide hope for battle against malaria.

### **Increasing Death Toll from Ebola Outbreak**

As of July 23,2014 WHO in partnership with the Ministries of Health in Guinea, Sierra Leone, and Liberia, announced total of 1201 suspect and confirmed cases of Ebola virus disease (EVD) and 672 deaths. Of the 1201 clinical cases, 814 cases have been laboratory confirmed for Ebola virus infection. One Liberian man who had flown to Nigeria had been infected with Ebola and died in Nigeria on July 25. While two other Americans one of them is a doctor from Texas working in Liberia has also been infected and is currently in isolation. Crisis is worsening in Sierra Leone where state emergency had been declared. The outbreak is being caused by one of the deadliest strain of Ebola virus which can be contracted from meat of infected bats, monkey and apes. Fruit bats are considered delicacy in guinea where the outbreak started.

## **A Case of Caribbean Cripple**

Contributed by Katelyn Booher, DO

A 50-year old male of African descent residing in Dominica, an island in the eastern Caribbean, reported the acute onset of diffuse body aches most prominent in the knees and chest. Symptoms began the morning of May 3, 2014, and peaked by noon that day. The patient recorded an oral temperature of 106°F by 1p.m. He described his knees first, then elbows, feeling like they were being ripped apart from inside. The second day into his illness, severe joint pains continued, and the patient noticed a rash on his right arm at 6:30a.m. By 11a.m., the rash had spread to his elbow and resembled raised individual welts. The patient then attempted self-treatment with an Indian homeopathic remedy consisting of an extract of Papaya leaves, which seemed to ameliorate his joint pains. By day three, joint pains persisted, though they had improved. One month later, the only persistent symptoms were in the PIP and DIP joints of the index and second finger of the patient's left hand. The patient's symptoms and course were consistent with those experienced by others during the island's outbreak of Chikungunya, a viral disease which had recently appeared, and spread, throughout the Caribbean.

### **Discussion**

Chikungunya translates to “that which bends up” or “that which walks bent over” (1). Chikungunya virus is an arbovirus in the Alphavirus family, specifically in the group that is known for causing fever, rash, and arthralgias (2). *Aedes aegypti* was the primary vector for chikungunyavirus until recently, when *Aedes albopictus* was recognized as another efficient vector as well (3). Chikungunya is considered a re-emerging disease. The virus was primarily confined to Africa until 2004 when spread to the Indian subcontinent and Southeast Asia was recognized (3).

As feared, the virus has now reached the western hemisphere, where it has spread through the Caribbean islands, reaching as far north as Haiti and the Dominican Republic and as far south as Aruba and St. Vincent and the Grenadines (3). In addition, French Guiana of northern South America has also been affected. As of July 29, 2014, Chikungunya was identified as locally transmitted in the continental U.S., specifically, two locally transmitted cases of Chikungunya have been identified in Florida. Nearly 200 locally transmitted cases have been reported in Puerto Rico as well (4). The massive spread has in part been fueled by a single point mutation that enabled the virus to replicate efficiently in the second vector, *A. albopictus*, or the Asian Tiger mosquito. This strain, however, is not implicated in the Caribbean islands, and has been associated with disease in India as well as Italy. The 2014 CHIKV from the British Virgin Islands is of the Asian genotype, and is closely related to strains recently isolated in China and the Philippines. It is likely that a single Asian strain CHIKV was recently introduced to and is now spreading throughout the Caribbean (5).

It is apparent that CHIKV is associated with long-term complications, including chronic joint pain and decreased quality of life due to this (6,7). Vaccination is unavailable, but studies are ongoing. A highly attenuated CHIKV vaccine was found to produce a protective response without adverse effects in a small study of non-human primates (8). Two live-attenuated vaccine candidates were generated, and vaccination of macaques with a single dose of either vaccine produced no signs of disease, and was highly immunogenic. After challenge with a subcutaneous inoculation of wild-type CHIKV, no detectable viremia or significant clinical findings developed when compared to controls. There is no available treatment currently (9), but our patient and his cohort have reported benefits of the Indian bush remedy of Papaya. Leaf extracts from *Carica papaya* are commonly prescribed for dengue fever (2). Studies are limited regarding Papaya as a treatment option for CHIKV, but there have been studies of Papaya and Dengue virus. One study analyzed anti-dengue activities of *Carica papaya* compounds using bioinformatics tools. The results did suggest that the flavonoid quercetin from *Carica Papaya* inhibits NS2B-NS3 protease, preventing viral assembly of Dengue (2).

Chikungunya virus continues to advance through the Caribbean and toward the southern United States as well as South America (3). Significant long-term morbidity continues to occur as a result of Chikungunya despite our best efforts at mosquito control. Unfortunately, prevention or treatment of this virus is unresolved, and the virus remains a global health problem.

## References

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## **Religious Objections to Immunization**

John Porter, University of Dayton Student

Between 2006 and 2011, the rate of nonmedical exemptions to public-school required vaccination nearly doubled nationwide with annual increases each year. In states with easy exemption policies, rates of nonmedical exemptions were 2.31 times greater than in states with difficult exemption policies (1). In the state of Ohio, a parent can exempt their child from immunization for “reasons of conscience” (including religious convictions) with a simple written statement (2). In the 2011-12 school year, nonmedical exemptions were granted to 1.3% of kindergarten students in Ohio, which is slightly above the national median (3).

In Montgomery County in 2010, almost half of the population (over 250,000 individuals) regularly attended religious services. The vast majority of these individuals belonged to Christian congregations with the largest of these groups being the Catholic Church. Substantial populations (>1000 adherents) also existed of Hindus, Buddhists, and Muslims (4). Although Ohio does not differentiate between religious exemptions and other nonmedical exemptions to vaccination, it stands to reason that some exemptions were religiously motivated. Understanding the teachings of religious groups toward vaccinations is important, as it can guide discussions with patients and potentially increase the likelihood of vaccine acceptance.

In February 2013, John D. Grabenstein, a Merck researcher with interests in world religions and their views on vaccinations, published a review of scriptural and liturgical views on immunization for the largest world religions in the journal *Vaccine* (5). He searched online databases to determine the prevalence of religious objections to immunization for each of the religions and denominations in his study, then compared these results with sources such as religious reference books and scriptural texts. The following are summaries of his findings for each of the largest religious denominations in Montgomery County.

### **Christianity**

The majority of Christian denominations were found to have no scriptural or canonical objections to immunization. There are groups within several denominations, including Roman Catholics, which have expressed concern about the use of aborted fetal components in the formulation of the rubella vaccine. The rubella strain used in the formulation of the rubella vaccine was isolated from the kidney tissue of a therapeutically aborted fetus from a mother infected with rubella. The National Catholic Bioethics Center and the Pontifical Academy for Life determined that immunization with this vaccine is acceptable because the fetus was not aborted with the purpose of obtaining the virus and no more abortions are necessary to maintain the strain. The author also notes that vaccination is supported by the Christian notion of service to humanity.

Several smaller Christian denominations have alternative views of vaccination. Within Amish communities, vaccination rates are low, but this phenomenon has more to do with social traditions opposing modernity than religious opposition. Acceptance of vaccination within Amish communities increases in times of outbreaks. Jehovah’s Witnesses, known for their refusal of blood transfusions, may be reluctant to accept vaccination due to historical policies prohibiting receiving vaccines. However, more recent guidance offered by the Watch Tower Society states that vaccination is not prohibited and some Jehovah’s Witness publications have acknowledged the clinical benefits of vaccination. A few denominations, such as the Church of Christ, Scientist, promote faith healing and are opposed to vaccination. Adherents to these denominations are at high risk of outbreak. Vaccine acceptance may increase in times of outbreaks.

## **Buddhism**

Buddhists have no central scriptural text, but vaccination is widely accepted in predominantly Buddhist countries. Buddhist teachings prohibit killing, however exceptions can be made when doing so allows a person to get closer to reaching Enlightenment, as in the case of antibiotics killing microorganisms. Because disease can be seen as an obstacle to mind-body unity, prevention of disease by vaccination is acceptable as a means of preventing disharmony.

## **Hinduism**

Immunization is also widely accepted in predominantly Hindu countries. Religious texts are often interpreted metaphorically as opposed to literally and a respect for all life is emphasized. While many Hindus revere the cow and abstain from consuming its meat, there have been no noted objections to the use of bovine excipients in vaccines.

## **Jainism**

Jains oppose killing any life forms, but they do acknowledge a hierarchy of life. Therefore, Jains accept the killing of microorganisms in the formulation of vaccines due to its necessity in protecting human life.

## **Judaism**

Immunization has been encouraged in Judaism as means to preserve one's own life, a primary value, as well as to protect the community. While kosher laws may be seen as problematic, rabbis have generally maintained that kosher laws only apply to orally administered medicines, meaning injectable immunizations with porcine excipients are acceptable. Even orally administered medications have been deemed acceptable given sufficient dilution or transformation of the non-kosher components. Ultraorthodox Jewish communities may have low rates of immunization, but these have been associated more with social norms and safety concerns than with religious objections.

## **Islam**

Vaccinations are generally deemed consistent with Islamic principles, although several potential issues have arisen. The most relevant of these is the requirement that the magnitude of the benefit of the vaccine must be greater than the harm of the side effects. A quote from Muhammad may also be helpful; "God has not made things that are unlawful for you to consume to be your medicine."

A study of methods used by clinicians to respond to those with religious objections to vaccination recommended discussing the decision-making process rather than providing additional medical information about the vaccine in question (6). It is vital for clinicians to understand the concerns of their patients with regards to immunization. This allows for an informed discussion to take place with a reluctant patient and can increase the likelihood of vaccine acceptance without resorting to an authoritative stance.

## **References**

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## 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 and are often considered contaminants or colonizers. Please contact me at [wgstarrett@premierhealth.com](mailto:wgstarrett@premierhealth.com) if you come across an isolate that may fit in this category.

**Organism:** *Achromobacter xylosoxidans*

### Clinical Data:

A 44 year-old female with history of multiple admissions for gastroparesis and line-related bacteremia presented with fever and worsening GI symptoms and was admitted. Her history was also significant for a pacemaker replacement two years prior. Admission blood cultures were positive and the Infectious Disease service was consulted. On exam, her vitals were stable and the pacemaker and PICC line exit sites were without erythema or tenderness. No peripheral stigmata of endocarditis were identified. Blood cultures eventually grew *Enterococcus raffinosus* (two of four sets) and a moderately resistant *Achromobacter xylosoxidans* (subspecies *denitrificans*, three of four sets). Alternative strategies for hydration were discussed with the patient and primary service, and she completed a two week course of piperacillin/tazobactam. Unfortunately she returned two months later with positive blood cultures for *Enterobacter agglomerans* and *acinetobacter baumannii/haemolyticus*. She has since had a tunneled chest port placed and has not had a documented line infection for two years.

### Taxonomy:

Family: *Alcaligenaceae*

Genus: *Achromobacter*

Species: *xylosoxidans*

### Associated Diseases:

1. Nosocomial bacteremia
2. pneumonia
3. Various other opportunistic infections, including
  - a. UTI
  - b. Otitis
  - c. CNS infections
  - d. GI tract infections
  - e. Skin infections

### Description:

*Achromobacter xylosoxidans* (formerly *Alcaligenes xylosoxidans*) is a gram-negative rod of relatively low virulence which inhabits aquatic environments and soil and can also colonize the human gastrointestinal tract. A member of the family *Alcaligenaceae*, it shares characteristics with the genera *Alcaligenes* and *Bordetella*, including the presence of oxidase and ability to grow on MacConkey agar. *Achromobacter xylosoxidans* is able to acidify glucose and xylose (hence the species name), although the subspecies *denitrificans* (isolated in our case) is an asaccharolytic *Achromobacter* species. This organism is motile and has peritrichous flagella, in contrast to *pseudomonas*. Nosocomial bacteremia and pneumonia are the most common diseases described associated with this organism, and it is primarily an opportunistic pathogen. Infections with this organism have been described in patients with indwelling central lines, cystic fibrosis, malignancy and other immunocompromised states. It tends to be resistant to



fluoroquinolones and aminoglycosides, but is usually susceptible to broad spectrum penicillins and other beta-lactams.

**Resources:**

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## Upcoming Events

### August 2014

13	Journal Club	MVH 6NW
27	Case Conference	MVH Maxon Parlor

### September 2014

6-9	ICAAC	Washington, DC
10	Journal Club	MVH 6NW
24	Case Conference	MVH Maxon Parlor

### October 2014

8	Journal Club	MVH 6NW
8-12	IDSA/ID Week	Philadelphia, PA
29	Case Conference	MVH Maxon Parlor

### November 2014

2-6	American Society of Tropical Medicine & Hygiene	New Orleans, LA
12	Journal Club	MVH 6NW
26	Case Conference	TBA

### December 2014

10	Journal Club	MVH 6NW
	Case Conference (Cancelled)	

### January 2015

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

### February 2015

11	Journal Club	MVH 6NW
23-26	Conference on Retroviruses and Opportunistic Infections	Boston, MA
25	Case Conference	MVH Maxon Parlor

### March 2015

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

### April 2015

25-28	European Congress of Clin Micro & Inf Dis	Copenhagen, Denmark
30-5/2	ACP Internal Medicine 2015	Boston, MA

### June 2015

4-6	Refugee Health Conference	Toronto, Canada
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