



Communicable Disease and Epidemiology News

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Shelly McKeirnan, MPH Editor (shelly.mckeirnan@kingcounty.gov)

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- **Fever and Arthralgias in a Traveler to Indonesia**
- **Pertussis Update**

Fever and Arthralgias in a Traveler to Indonesia¹

Ms. C., a 30 year old woman in prior good health, presented to the Infectious Diseases (ID) clinic for evaluation of fever, arthralgias, and rash that began following a two week trip to Indonesia. She had spent much of her time scuba diving, but also took day trips into the jungle. She did not take malaria prophylaxis, and recalled getting multiple mosquito bites. She felt well during her travels, but developed fevers to 102 Fahrenheit upon returning to the US. She also developed pains in her fingers, wrists, and toes bilaterally, followed by pain in her proximal joints and back that made weight-bearing difficult. Later that same week, she noted a diffuse, erythematous, pruritic rash. At initial evaluation in the primary care clinic, her complete blood count (CBC) was notable for a total white count of 4,400 with 31% bands; other chemistries and liver transaminases were unremarkable. Malaria smears and dengue antibody testing (IgM and IgG), were negative.

On evaluation in the ID clinic the following week, Ms. C. appeared uncomfortable due to her joint pains and pruritic rash. No red or warm joints were noted, though range of motion testing of her extremities was painful. A follow-up CBC was within normal limits. Repeat serologic testing at the Centers for Disease Control and Prevention (CDC) was performed two weeks later. Dengue IgM and IgG remained negative, but chikungunya IgM and IgG were both positive. Ms. C., unfortunately, continues to have ongoing joint pains more than two months later, despite the resolution of her fever and rash.

Chikungunya virus (CHIKV) is an enveloped RNA virus that belongs to the *Alphavirus* genus of the *Togoviridae*; related viruses in the U.S. include Western and Eastern encephalitis viruses. Its name is derived from the language of the Makonde people of Tanzania (Kimakonde), meaning “that which bends up,” to describe the contorted posture assumed by patients suffering from severe joint pain. CHIKV is transmitted by *Aedes aegypti* and *A. albopictus*, which are also dengue vectors.

The current chikungunya (CHIK) epidemic began in Kenya in 2004, subsequently spreading to islands in the Indian Ocean – including Réunion where approximately one third of the island’s population was affected – as well as Southern India. At least 52 cases were identified in returning travelers to the US by 2007, according to the most recent data published by the CDC.

CHIK typically manifests with the acute onset of fevers and joint pains after an incubation period of 2-12 days. The vast majority (range 75-97%) of infections are symptomatic. Arthralgias associated with CHIK are symmetric and typically involve small, distal joints such as wrist, ankles, or fingers. About 50% of patients develop a maculopapular rash.

However, a range of skin findings have been reported, including bullae in children. Other symptoms such as myalgia, headache, nausea, vomiting, and prostration may occur.

Clinical diagnosis may be challenging as many symptoms are non-specific and overlap with other illnesses common in the returned traveler such as dengue and malaria. The presence of small joint arthralgias, however, should lead clinicians to consider a diagnosis of CHIK.

Severe CHIK manifestations such as encephalitis, myocarditis, hepatitis, and the Guillain-Barré syndrome have been described, and are most common in children, persons over 65 years old, and in individuals with other underlying medical conditions. Vertical transmission has also been reported, with the highest risk found in mothers viremic at time of delivery. CHIK is rarely fatal, though a mortality rate of 1 in 1000 was estimated for the Réunion outbreak. The acute phase of CHIK typically lasts 3-10 days, but some patients will have ongoing arthralgias that may last months, or even years. The cause of persistent symptoms in these individuals is not well understood. CHIKV infection is thought to confer life-long immunity.

CHIK diagnosis is primarily serologic, with detection of IgM in an acute sample or a 4 fold or greater rise in IgG titers between acute and convalescent specimens. The potential for cross-reactivity with other *Alphaviruses* should be noted; details of the travel itinerary can help identify the most likely exposure. Viremia is present at high levels during the first 48 hours of illness, and virus can be cultured during the first week. RT-PCR (polymerase chain reaction) has also been used, but is not widely available in clinical practice. Routine laboratory studies are not often helpful; leukopenia with lymphocytosis, thrombocytopenia, transaminitis, and elevation of acute phase reactants can be seen.

Treatment for CHIK is generally supportive. No antiviral agents have demonstrated clinical efficacy. NSAIDS (nonsteroidal anti-inflammatory drugs) or acetaminophen in conjunction with mild physical activity may help with arthralgias, though more intense exercise may worsen pain. Few data are available to guide management of persons with chronic joint pain. Steroids and chloroquine have been used in recalcitrant cases; further study of these approaches is needed.

The widespread distribution of *Aedes* mosquitoes raises the potential for an even more extensive CHIK epidemic. Consequently, infected travelers should be counseled to avoid mosquito bites during the acute phase of their illness so as to reduce the chance of spreading CHIKV to other persons, such as has occurred in Northern Italy. Efforts to develop an effective vaccine are underway. Prevention of CHIK currently centers on general mosquito-bite avoidance measures such as use of insect repellents and protective clothing.

Call Public Health at 206-296-4774 to report suspected cases, and for assistance with laboratory testing. More information is available at www.cdc.gov/ncidod/dvbid/chikungunya/.

¹*Epi-Log staff* welcomes article submissions about communicable diseases of public health importance. This case was submitted by John Szumowski, MD MPH, Infectious Diseases Fellow at the University of Washington.

Pertussis Update

This year several states in the U.S. have reported an increased number of pertussis cases with California reporting the most cases in 63 years. During January–December 4th, 2010, more than 442 probable and confirmed cases were reported in Washington. Fifty-six confirmed cases of pertussis were reported in King County during this same time. This is an increase from 2009 (37 cases), but less than the average number of confirmed cases over the past five years (79 cases).

During 2010, 29% of cases reported in King County were among infants less than one year old. This is the largest proportion of infant cases in the past five years (range: 17–24%). For nearly half of infant cases, the most likely source of infection was an adult household member. Forty-four percent of infants required hospitalization. No deaths have been reported in King County, but two infant deaths have been reported in other counties in Washington in 2010.

Pertussis Testing

There are several methods available to test for pertussis. However, isolation of *Bordetella pertussis* by culture and detection of *B. pertussis* by polymerase chain reaction (PCR) are the only ways to confirm the diagnosis.

Culture: Culture is the most specific test for pertussis. Culture from the posterior nasopharynx is most sensitive if performed within the first 2 weeks of illness and is more sensitive in young children than in adolescents or adults. Because *B. pertussis* is fastidious and its isolation in culture is easily obscured by the growth of other nasopharyngeal organisms, proper specimen collection and handling will improve the chances of recovering the organism. Specimens collected after the initiation of any type of antibiotic therapy are less likely to yield *B. pertussis*.

PCR: PCR testing for *B. pertussis* should be used in addition to culture. **A nasopharyngeal specimen for pertussis PCR is the preferred method of testing for pertussis.** It is more sensitive than culture and results are available more quickly.

Serology: Serological tests can be useful for epidemiological studies but are not of clinical utility. At this time, positive serology results from hospital or commercial laboratories are not considered confirmatory of acute pertussis for public health reporting and surveillance purposes.

Pertussis culture and PCR testing is available at the King County Public Health Laboratory (206-744-8950) and reference labs. A pertussis issue brief and reporting information is at: www.kingcounty.gov/healthservices/health/communicable/providers.aspx.

Prevention

Vaccination of adults and adolescents in close contact with young infants may eliminate a substantial proportion of infant pertussis; it is estimated that 35%–55% or more of infant cases

could be prevented by vaccinating parents against pertussis. Despite this, the Tdap coverage rate among adults 18–64 years in the U.S. for 2008 was under 6%, and was only 15% for healthcare workers².

Preventing Pertussis in Infants

Mothers who have not already received a Tdap booster should be vaccinated as soon as possible after delivery and before hospital discharge. Other adult and adolescent household members and other close contacts of infants should be vaccinated before or during the pregnancy to protect them and the newborn against pertussis.

During 2005–2008, ACIP recommended these groups receive a single dose of Tdap:

- Unvaccinated pregnant women in the immediate post-partum period before discharge
- All adult and adolescent household members, as soon as possible during the pregnancy
- All non-pregnant persons 11–64 years of age
- Health care workers less than 65 years of age who have direct patient contact.

NEW October, 2010, ACIP also recommended these groups receive Tdap as soon as feasible (recommendations to be published in MMWR shortly):

- Adults >65 years who have or anticipate contact with infants <1 year (e.g., grandparents, child care providers, healthcare providers).
- Adults and adolescents who haven't received a prior dose of Tdap or for whom pertussis vaccine history is unknown, regardless of the interval since the last Td or DTaP
- Children 7–10 years who are unvaccinated or have not received a complete primary series of DTaP should receive one dose of Tdap, preferably as the initial dose of their catch-up series, followed by appropriately scheduled Td doses.

Disease Reporting

AIDS/HIV..... (206) 296-4645
 STDS..... (206) 744-3954
 TB..... (206) 744-4579
 All Other Notifiable
 Communicable Diseases (206) 296-4774
 Automated reporting line for conditions
 not immediately notifiable (24/7)..... (206) 296-4782
 Communicable Disease Hotline..... (206) 296-4949

The **EPI-LOG**: www.kingcounty.gov/health/epilog
Communicable Disease Listerv (PHSKC INFO-X) at:
mailman.u.washington.edu/mailman/listinfo/phskc-info-x
Influenza Information: www.kingcounty.gov/health/flu

² MMWR Oct. 15, 2010 online at:

www.cdc.gov/mmwr/preview/mmwrhtml/mm5940a3.htm?s_cid=mm5940a3_w

Reported Cases of Selected Diseases, Seattle & King County 2010

	Cases Reported In November		Cases Reported Through November	
	2010	2009	2010	2009
Campylobacteriosis	17	14	281	250
Cryptosporidiosis	1	3	16	28
Chlamydial infections	311	404	5209	5403
Enterohemorrhagic <i>E. coli</i> (including <i>E. coli</i> O157:H7 and non-O157)	13	5	40	64
Giardiasis	10	10	122	93
Gonorrhea	109	108	1384	983
<i>Haemophilus influenzae</i> (cases <5 years of age)	1	0	4	1
Hepatitis A	2	0	7	14
Hepatitis B (acute)	1	1	15	11
Hepatitis B (chronic)	54	65	628	607
Hepatitis C (acute)	1	2	8	6
Hepatitis C (chronic)	93	125	1447	1467
Herpes, genital (primary)	47	43	525	502
HIV and AIDS (includes only AIDS cases not previously reported as HIV)	40	44	334	313
Measles	0	0	1	0
Meningococcal Disease	0	1	7	4
Mumps	0	0	1	1
Pertussis	5	1	55	33
Rubella	0	0	1	0
Rubella, congenital	0	0	0	0
Salmonellosis	20	17	215	236
Shigellosis	4	4	43	58
Syphilis	25	12	249	147
Syphilis, congenital	0	0	0	1
Syphilis, late	5	6	63	80
Tuberculosis	7	13	100	101

The *Epi-Log* is available in alternate formats upon request.