

# PUBLIC HEALTH



# Bulletin

COUNTY OF ORANGE • HEALTH CARE AGENCY

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## *Clostridium difficile*—an increasing threat

Recently there have been reports of increased incidence, severity, and recurrent episodes of *Clostridium difficile* infection. Outbreaks have been reported from hospitals in the United States, Canada, Great Britain and the Netherlands. Several studies have identified a new strain that has been associated with outbreaks, produces more toxin, and is more resistant to antibiotics than other strains. Finally, the Centers for Disease Control & Prevention (CDC) has reported severe *C. difficile* infection in populations previously thought to be at low risk.

These developments give physicians even more reasons to use antibiotics carefully and require the consideration of *C. difficile*-associated disease (CDAD) early and in a wide spectrum of patients. Individual cases of *C. difficile* infection are not reportable in California; however, outbreaks and unusual occurrences should be reported immediately to Orange County Epidemiology at 714-834-8180.

### The Pathogen

*C. difficile* is a Gram-positive spore-forming anaerobic bacillus that is the most common

cause of diarrhea acquired in acute care hospitals. The pathogenic effects are attributed primarily to two toxins, A and B. Potential additional virulence factors in the newly identified strain include deletion of a gene that is thought to negatively regulate toxin production and production of an additional toxin, known as binary toxin. The epidemic strain has been shown to produce 16 times the amount of toxin A and 23 times the amount of toxin B when compared to control strains. The epidemic strain also produces large amounts of the toxins earlier in its growth cycle than control strains (at 24 hours, the epidemic strain produced 136 times as much toxin A and 50 times the amount of toxin B). This may explain the rapid progression of disease in some patients and points to the need for early identification of cases.

The epidemic strain, which is variously referred to as BI, NAP1 (North American pulse-field type 1), or toxinotype 3, was first identified in 1984 and was uncommon until 2001. The severity of outbreaks caused by the new strain is illustrated by an outbreak at a Pittsburgh hospital where there were 253 nosocomial cases over two years with 26 colectomies and 18 deaths.

### Epidemiology

Transmission of *C. difficile* is by the fecal-oral route. Hospitals are major reservoirs of *C. difficile*. The spores can contaminate the patient care environment, fomites, and the hands of healthcare workers, which then become the source of infection for other patients. Twenty percent to 40% of inpatients become colonized. In long-term care facilities, colonization ranges from 4% to 20%. In healthy adults, *C. difficile* colonization rates are less than 3%. The incubation period from ingestion of *C. difficile* organisms to development of symptoms is unknown.

Antimicrobial exposure is the major risk factor for disease, due in part to the disruption of normal flora of the colon. Symptoms can appear shortly after starting antimicrobial therapy

up to several months after the end of treatment. While many antimicrobials have been associated with CDAD, clindamycin, penicillins, and cephalosporins have had the strongest associations. Fluoroquinolones have been implicated more recently and studies have shown that increased use of fluoroquinolones or even switching from ciprofloxacin to levofloxacin can be followed by hospital outbreaks of CDAD, as seen in Quebec and Pittsburgh.

Other reported risk factors include age greater than 65 years, longer hospital stay, severe underlying disease, nasogastric intubation, anti-ulcer medications, gastrointestinal surgery or manipulation and previous episode of CDAD.

Reported incidence varies from 1 to 30 cases per 1,000 patient discharges. In the United States, incidence has been highest in the northeast and lowest in the west. The epidemic strain has been identified in 19 US states, including California. National hospital discharge data for which CDAD was listed as any diagnosis doubled from 1996 to 2003 to an estimated incidence of 61/100,000 in 2003. Among persons 65 years of age and older the rate was much higher (228/100,000).

### Clinical presentation

CDAD ranges in presentation from asymptomatic colonization to mild to moderate diarrhea, to pseudomembranous colitis, toxic megacolon, fulminant colitis, sepsis and death. The diarrhea is usually watery, and patients have fever, loss of appetite, nausea, and abdominal pain and/or tenderness. Severe colitis with systemic symptoms, a significant leukocytosis ( $>20,000/\text{mm}^3$ ), and an acute abdomen are indications for an immediate surgical consult. Rarely ( $<1\%$ ) patients develop an ileus and do not have diarrhea.

### Diagnosis

There are several different types of di-

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# Avian Influenza still a major public health concern

From CDC, WHO and HCA sources

The arrival of the New Year has brought with it an increase in poultry outbreaks of avian influenza A H5N1 and additional human cases in countries previously affected by the disease. World Health Organization (WHO) Director-General Dr. Margaret Chan has warned against relaxing the world's defenses against a potential influenza pandemic, noting that more deaths occurred in 2006 than in previous years combined and that the fatality rate for H5N1 rose to 69% among confirmed cases last year.

The U.S. Centers for Disease Control (CDC) has issued interim recommendations for health care workers who may treat patients with suspected avian influenza (AI) (see [www.cdc.gov/flu/avian/professional/infect-control.htm](http://www.cdc.gov/flu/avian/professional/infect-control.htm)). These recommendations include:

- All patients who present to a healthcare setting with fever and respiratory symptoms should be:
  - managed according to recommendations for respiratory Hygiene/Cough Etiquette in Healthcare Settings (see: [www.cdc.gov/flu/professionals/infectioncontrol/respihygiene.htm](http://www.cdc.gov/flu/professionals/infectioncontrol/respihygiene.htm)); and
  - questioned regarding their recent travel history.
- Patients with a history of travel within 10 days to a country with AI activity and who are hospitalized with a severe febrile respiratory illness, or are otherwise under evaluation for AI, should be managed using isolation precautions identical to those recommended for patients with known Severe Acute Respiratory Syndrome (SARS). These include:

## Standard Precautions

- **Hand hygiene is absolutely essential.**
  - Before and after all patient contact.
  - As soon as possible after contact with items contaminated or potentially contaminated with respiratory secretions.

## Contact Precautions

- Use gloves and gown for all patient contact.
- Use disposable equipment (blood pressure cuffs, thermometers) or equipment that can be disinfected before use with another patient (stethoscopes, etc.).

## Droplet Precautions

- Wear goggles or face shields when within 3 feet of the patient.

## Important considerations:

- Face shields are insufficient protection for airborne hazards or for facial splashes.

## Airborne Precautions

- Place the patient in an airborne infection isolation room. Airborne infection isolation rooms:
  - should have monitored negative air pressure in relation to the corridor, with 6 to 12 air changes per hour, and
  - should exhaust air directly to the outside or have recirculated air filtered by a high efficiency particulate air (HEPA) filter.
- Keep the doors to the patient room closed; this protects others who are nearby.
- If an airborne infection isolation room is unavailable, contact the healthcare facility engineer to assist or use portable HEPA filters
- Use a fit tested respirator, at least as protective as a National Institute for Occupational Safety and Health (NIOSH)-approved N-95 filtering facepiece (i.e., disposable) respirator, when entering the room.

## Transmission Prevention Strategies in Healthcare Settings\*

- Place patients that are AI-infected and those that are suspected of being AI-infected together in the same room if private rooms are not available. This would only be possible if there were specific epidemiologic risk factors (i.e., travel to an AI-affected area, or exposure to AI-infected birds) to screen patients who could potentially have AI.
- If possible, try not to place patients with seasonal influenza and those with AI in the same room. Although the risk is relatively small, the sharing of the same room by such patients would increase the chances of co-infection of patients with the two viruses and this could lead to viral reassortment of genes and the possible emergence of a pandemic virus. The separation of patients with suspect AI would only be possible if there were epidemiologic risk factors allowing screening of potential AI patients, as symptoms of seasonal influenza and AI are similar. Once a pandemic has been declared, all patients with influenza-like illness would be suspected to have pandemic influenza and could be cohorted together.
- Minimize transportation of influenza patients outside of room.
- Limit the number of healthcare workers caring for influenza patients.
- Limit the number of visitors to influenza patients.

Complete occupational guidance informa-

## C. difficile (Continued from Page 1)

agnostic testing available for CDAD, of which toxin detection in stool is the most commonly used. Each type of laboratory test available has advantages and disadvantages and should only be performed on persons with suspected CDAD. Toxin testing by rapid enzyme immunoassays is available for toxin A, toxin B or both A and B; they are fairly specific but may lack sensitivity. Repeat testing may be needed in patients where there is a high clinical suspicion and an initial test is negative. Note that there are strains that produce only toxin B; these will be missed by tests that only detect toxin A. Tests with greater sensitivity include anaerobic culture for *C. difficile* (preferably with confirmation of toxin production) and cytotoxicity assays; however, these are more expensive, technically more difficult, and have longer turnaround times. Test of cure is not indicated.

## Treatment

The most important factor in the initial treatment of CDAD is stopping the inciting antimicrobial agent(s) if possible. Oral metronidazole is often used for initial treatment of mild to moderate illness. Oral vancomycin is an alternative and is recommended if patients do not improve on metronidazole. In moderate to severe disease, oral vancomycin may be used for initial treatment. For severe or rapidly progressing disease, oral or intraluminal vancomycin is recommended and a surgical consult should be considered. Antiperistaltic agents should be avoided. Patients with CDAD should be monitored closely for signs of progression. Asymptomatic colonization should not be treated.

Approximately one-fourth to one-third of patients will have a recurrence either due to relapse or reinfection. Most will respond to a second course of treatment with the same drug if it is their first recurrence. There is no proven treatment for patients with more than one recurrence, and the risk of additional recurrences is 50-65%. Other therapies, such as pulsed or tapered doses of oral vancomycin, intravenous immunoglobulin, probiotics and fecal transplantation, have been reported to be helpful in small numbers of patients.

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tion on protecting employees from avian influenza viruses is available on the Occupational Safety and Health Administration website at [www.osha.gov/OshDoc/data\\_AvianFlu/avian\\_flu\\_guidance\\_english.pdf](http://www.osha.gov/OshDoc/data_AvianFlu/avian_flu_guidance_english.pdf).

\*Adapted from the Occupational Safety and Health Administration (OSHA) updated guidance on Protecting Employees from Avian Flu (Avian Influenza) Viruses

**CONFIDENTIAL MORBIDITY REPORT**

NOTE: For STD, Hepatitis, or TB, complete appropriate section below. Special reporting requirements and reportable diseases on back.

**DISEASE BEING REPORTED:** \_\_\_\_\_ If applicable, specimen date    Source: \_\_\_\_\_  
MONTH DAY YEAR

<b>Patient's Last Name</b> <input style="width:100%;" type="text"/>		<b>Social Security Number</b> <input style="width:20%;" type="text"/> - <input style="width:20%;" type="text"/> - <input style="width:20%;" type="text"/>		<b>Ethnicity</b> (✓ one) <input type="checkbox"/> Hispanic/Latino <input type="checkbox"/> Non-Hispanic / Non-Latino	
<b>First Name and Middle Name</b> <input style="width:100%;" type="text"/>		<b>Birth Date</b> <input style="width:20%;" type="text"/> <input style="width:20%;" type="text"/> <input style="width:20%;" type="text"/>		<b>Age</b> <input style="width:20%;" type="text"/>	
<b>Address: Number, Street</b> <input style="width:100%;" type="text"/>		<b>State</b> <input style="width:20%;" type="text"/>		<b>Race</b> (✓ one) <input type="checkbox"/> African-American/Black <input type="checkbox"/> Asian / Pacific Islander (✓ one) <input type="checkbox"/> Asian-Indian <input type="checkbox"/> Japanese <input type="checkbox"/> Cambodian <input type="checkbox"/> Korean <input type="checkbox"/> Chinese <input type="checkbox"/> Laotian <input type="checkbox"/> Filipino <input type="checkbox"/> Samoan <input type="checkbox"/> Guamanian <input type="checkbox"/> Vietnamese <input type="checkbox"/> Hawaiian <input type="checkbox"/> Other: _____	
<b>City/Town</b> <input style="width:100%;" type="text"/>		<b>Zip Code</b> <input style="width:20%;" type="text"/>		<input type="checkbox"/> Native American / Alaskan Native <input type="checkbox"/> White <input type="checkbox"/> Other: _____	
<b>Area Code</b> <input style="width:20%;" type="text"/>	<b>Home Telephone</b> <input style="width:20%;" type="text"/> - <input style="width:20%;" type="text"/> - <input style="width:20%;" type="text"/>	<b>Gender</b> <input type="checkbox"/> M <input type="checkbox"/> F	<b>Pregnant?</b> <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> UNK	<b>Estimated Delivery Date</b> <input style="width:20%;" type="text"/> <input style="width:20%;" type="text"/> <input style="width:20%;" type="text"/>	
<b>Area Code</b> <input style="width:20%;" type="text"/>	<b>Work Telephone</b> <input style="width:20%;" type="text"/> - <input style="width:20%;" type="text"/> - <input style="width:20%;" type="text"/>	<b>Patient's Occupation/Setting</b> <input type="checkbox"/> Food service <input type="checkbox"/> Day care <input type="checkbox"/> Correctional facility <input type="checkbox"/> Health care <input type="checkbox"/> School <input type="checkbox"/> Other: _____			

<b>DATE OF ONSET</b> <input style="width:20%;" type="text"/> <input style="width:20%;" type="text"/> <input style="width:20%;" type="text"/>		<b>Reporting Health Care Provider</b> <input style="width:100%;" type="text"/>		<b>REPORT TO:</b>  <b>Orange County Public Health</b>  <b>Fax: (714) 834-8196</b>  <b>Mail: P.O. Box 6128 Santa Ana, CA 92706-0128</b>  <b>Phone: (714) 834-8180</b>	
<b>DATE DIAGNOSED</b> <input style="width:20%;" type="text"/> <input style="width:20%;" type="text"/> <input style="width:20%;" type="text"/>		<b>Reporting Health Care Facility</b> <input style="width:100%;" type="text"/>			
<b>DATE OF DEATH</b> <input style="width:20%;" type="text"/> <input style="width:20%;" type="text"/> <input style="width:20%;" type="text"/>		<b>Address</b> <input style="width:100%;" type="text"/>			
		<b>City</b> _____ <b>State</b> _____ <b>Zip Code</b> _____			
		<b>Telephone Number</b> _____ <b>Fax</b> _____ ( ) ( )			
		<b>Submitted By</b> _____ <b>Date Submitted</b> <input style="width:20%;" type="text"/> <input style="width:20%;" type="text"/> <input style="width:20%;" type="text"/>			

**SEXUALLY TRANSMITTED DISEASES (STD)**

**Syphilis**  
 Primary (lesion present)  Late latent > 1 year  
 Secondary  Late (tertiary)  
 Early latent < 1 year  Congenital  
 Latent (unknown duration)  
 Neurosyphilis

**Syphilis Test Results**  
 RPR Titer: \_\_\_\_\_  
 VDRL Titer: \_\_\_\_\_  
 FTA/MHA:  Pos  Neg  
 CSF-VDRL:  Pos  Neg  
 Other: \_\_\_\_\_

**Gonorrhea**  
 Urethral/Cervical  
 PID  
 Other: \_\_\_\_\_

**Chlamydia**  
 Urethral/Cervical  
 PID  
 Other: \_\_\_\_\_

PID (Unknown Etiology)  
 Chancroid  
 Non-Gonococcal Urethritis

**VIRAL HEPATITIS**

Hep A  
 Hep B  
 Acute  
 Chronic  
 Hep C  
 Acute  
 Chronic  
 Hep D (Delta)  
 Other: \_\_\_\_\_

**Please send copies of the hepatitis serologies (required for diagnosis) and liver enzymes (if done).**

**STD TREATMENT INFORMATION**

Treated (Drugs, Dosage, Route) Date Treatment Initiated

Untreated  
 Will treat  
 Unable to contact patient  
 Refused treatment  
 Referred to: \_\_\_\_\_

**Suspected Exposure Type**

Blood transfusion  Other needle exposure  
 Sexual contact  Household contact  
 Child care  Other: \_\_\_\_\_

**TUBERCULOSIS (TB)**

**Status**  
 Active Disease  
 Confirmed  
 Suspected  
 Infected, No Disease  
 Converter  
 Reactor

**Mantoux TB Skin Test**  
 Date Performed     
MONTH DAY YEAR  
 Results \_\_\_\_\_ mm  Pending  Not done

**Chest X-ray**  
 Date Performed     
MONTH DAY YEAR  
 Normal  Pending  Not done  
 Cavitory  Abnormal/Noncavitory

**Bacteriology**  
 Date Specimen Collected     
MONTH DAY YEAR  
 Source: \_\_\_\_\_  
 Smear:  Pos  Neg  Pending  Not done  
 Culture:  Pos  Neg  Pending  Not done  
 Other test(s): \_\_\_\_\_

**TB TREATMENT INFORMATION**

Current Treatment  
 INH  RIF  PZA  
 EMB  Other: \_\_\_\_\_

Date Treatment Initiated     
MONTH DAY YEAR

Untreated  
 Will treat  
 Unable to contact patient  
 Refused treatment  
 Referred to: \_\_\_\_\_

**REMARKS**

Please report the following diseases/conditions, including probable cases, to  
Epidemiology & Assessment using the *specified method and time frame*.

**Epidemiology and Assessment**  
P.O. Box 6128, Santa Ana, CA 92706-0128  
Telephone: (714) 834-8180, Fax: (714) 834-8196

If a report is urgent and it is a holiday, weekend, or after regular work hours,  
please contact the public health official on call at (714) 628-7008.

**☎ REPORT IMMEDIATELY** by telephone to Epidemiology.

① Report within **ONE (1) WORKING DAY** of identification by telephone, fax, or mail to Epidemiology.

⑦ Report within **SEVEN (7) CALENDAR DAYS** of identification by telephone, fax, or mail to Epidemiology.

★ When **two (2) or more cases or suspected cases of foodborne illness** from **separate households** are suspected to have the **same source of illness**, please **REPORT IMMEDIATELY** by telephone to Epidemiology.

⑦ AIDS [**Please call, DO NOT FAX REPORT**]

① Amebiasis

① Anisakiasis

☎ Anthrax

① Babesiosis

☎ Botulism (infant, foodborne, wound, other)

☎ Brucellosis

① Campylobacteriosis

⑦ Chancroid

⑦ Chlamydial infections

☎ Cholera

☎ Ciguatera Fish Poisoning

⑦ Coccidioidomycosis

① Colorado Tick Fever

① Conjunctivitis, acute infections of the newborn—please specify etiology

① Cryptosporidiosis

⑦ Cysticercosis

☎ Dengue

☎ Diarrhea of newborn, outbreaks only

☎ Diphtheria

☎ Domoic Acid Poisoning (Amnesic Shellfish Poisoning)

⑦ Echinococcosis (Hydatid Disease)

⑦ Ehrlichiosis

① Encephalitis—please specify etiology

☎ *Escherichia coli* O157:H7 infection

★ Foodborne disease

⑦ Giardiasis

⑦ Gonococcal infections

① *Haemophilus influenzae*, invasive disease (persons under 15 years of age)

☎ Hantavirus infections

☎ Hemolytic Uremic Syndrome

① Hepatitis A

⑦ Hepatitis B (specify acute case or chronic)

⑦ Hepatitis C (specify acute case or chronic)

⑦ Hepatitis D (Delta)

⑦ Hepatitis, other, acute

⑦ HIV [**Please call, DO NOT FAX REPORT**]

⑦ Kawasaki Syndrome (Mucocutaneous Lymph Node Syndrome)

⑦ Legionellosis

⑦ Leprosy (Hansen's Disease)

⑦ Leptospirosis

① Listeriosis

⑦ Lyme Disease

① Lymphocytic Choriomeningitis

① Malaria

① Measles (Rubeola)

① Meningitis—please specify etiology

☎ Meningococcal infections

⑦ Mumps

⑦ Non-Gonococcal Urethritis (excluding lab confirmed Chlamydial infections)

☎ Outbreaks

☎ Paralytic Shellfish Poisoning

⑦ Pelvic Inflammatory Disease (PID)

① Pertussis (Whooping Cough)

☎ Plague, human or animal

① Pneumococcal disease, invasive (request of local health officer)

① Poliomyelitis, paralytic

① Psittacosis

① Q Fever

☎ Rabies, human or animal

① Relapsing Fever

⑦ Reye Syndrome

⑦ Rheumatic Fever, acute

⑦ Rocky Mountain Spotted Fever

⑦ Rubella (German Measles)

⑦ Rubella Syndrome, congenital

① Salmonellosis (other than Typhoid Fever)

☎ Scombroid Fish Poisoning

☎ Severe Acute Respiratory Syndrome (SARS)

☎ Shiga toxin (detected in feces)

① Shigellosis

☎ Smallpox (Variola)

① Streptococcal infections (invasive disease caused by group A *Streptococcus*; outbreaks of any type; individual cases in food handlers and dairy workers only)

① Swimmer's Itch (Schistosomal Dermatitis)

① Syphilis

⑦ Taeniasis (request of local health officer)

⑦ Tetanus

⑦ Toxic Shock Syndrome

⑦ Toxoplasmosis

① Trichinosis

① Tuberculosis (including suspected cases)

☎ Tularemia

① Typhoid Fever, cases and carriers

⑦ Typhus Fever

☎ Unusual diseases

☎ Varicella (hospitalizations or deaths)

① *Vibrio* infections

☎ Viral Hemorrhagic Fevers (e.g., Crimean-Congo, Ebola, Lassa, and Marburg viruses)

① Water-associated disease

① West Nile Virus infection

☎ Yellow Fever

① Yersiniosis

# Plague: The Basics

While plague has been a potential bioterrorism concern in recent years, a 2006 case in Los Angeles County serves as a reminder that plague is a naturally occurring organism found in Southern California. Plague is considered a possible bioterrorism agent because it:

- can be transmitted from person to person;
- can result in high mortality rates and have the potential for major public health impact; and
- might cause public panic and social disruption.

Plague is an infectious disease that affects animals and humans. It is caused by the bacterium *Yersinia pestis*. This bacterium is found in rodents and their fleas and occurs in many areas of the world, including the United States. *Y. pestis* is easily destroyed by sunlight and drying. Even so, when released into air, the bacterium can survive for up to one hour, although this could vary depending on conditions. There are several forms of plague. Depending on circumstances, these forms may occur separately or in combination:

- **Bubonic plague** is the most common form of plague. This occurs when an infected flea bites a person or when materials contaminated with *Y. pestis* enter through a break in a person's skin. Patients develop swollen, tender lymph glands (called buboes) and fever, headache, chills, and weakness. Bubonic plague does not spread from person to person.
- **Septicemic plague** occurs when plague bacteria multiply in the blood. It can be a complication of pneumonic or bubonic plague or it can occur by itself. When it occurs alone, it is caused in the same ways as bubonic plague; however, buboes do not develop. Patients have fever, chills, prostration, abdominal pain, shock, and bleeding into skin and other organs. Septicemic plague does not spread from person to person.
- **Pneumonic plague** occurs when *Y. pestis* infects the lungs. It is transmitted through respiratory droplets from a person (or animal) with pneumonic plague, which usually requires direct and close contact. Pneumonic plague can occur secondarily in a person with bubonic or septicemic plague. Transmission could also take place if *Y. pestis* is aerosolized in a bioterrorist attack.

## Symptoms and Treatment

With pneumonic plague, the first signs of illness are fever, headache, weakness, and rapidly developing pneumonia with shortness of breath, chest pain, cough, and sometimes bloody or watery sputum. The pneumonia progresses for two to four days and may cause respiratory failure and shock. Without early treatment, risk of death is high.

**Early treatment of pneumonic plague is essential.** To reduce the chance of death, antibiotics must be given within 24 hours of first symptoms. Streptomycin, gentamicin, the tetracyclines, and chloramphenicol are all effective against pneumonic plague. Antibiotic prophylaxis for seven days is recommended for people who have had direct, close contact with infected patients. Wearing a close-fitting surgical mask also protects against infection. A plague vaccine is not currently available for use in the United States. For more information on plague, visit [www.bt.cdc.gov/agent/plague](http://www.bt.cdc.gov/agent/plague).

## *C. difficile* (Continued from Page 2)

### Prevention

Judicious use of antibiotics (avoidance of 3rd generation cephalosporins, clindamycin and fluoroquinolones whenever possible), surveillance and early identification, isolation of the patient using contact precautions, thorough cleaning of the environment (using bleach where possible), and hand hygiene are each important in preventing *C. difficile* infection. Soap and water should be used for hand hygiene when caring for patients with suspected or confirmed *C. difficile*; alcohol-based hand sanitizers should be avoided because alcohol does not kill the *C. difficile* spore.

### References

- CDC. Severe *Clostridium difficile*-Associated Disease in Populations Previously at Low Risk—Four States, 2005. *MMWR* 2005;54:1201-1205.
- McDonald LC, Killgore GE, et al. An Epidemic, Toxin Gene-Variant Strain of *Clostridium difficile*. *NEJM* 2005;353(23):2433-2441.
- McDonald LC, Owings M, Jernigan DB. *Clostridium difficile* infection in patients discharged from US short-stay hospitals, 1996–2003. *Emerg Infect Dis* 2006;12(3):409-415.
- Muto CA, Pokrywka M, et al. A Large Outbreak of *Clostridium difficile*-Associated Disease. *Infect Control Hosp Epidemiol* 2005;26:273-280.
- Sunenshine RH, McDonald LC. *Clostridium difficile*-associated disease: New challenges from an established pathogen. *Cleveland Clin J Med* 2006;73:187-197.
- Treatment of *Clostridium difficile*-Associated Disease. *Med Lett Drugs Ther* 2006;48:89-91.

# Continued West Nile reporting urged

Clinicians in Orange County are urged to continue reporting suspect West Nile Virus (WNV) cases during 2007 and to maintain a heightened index of suspicion for WNV infection, especially during the late spring and summer months. In particular, testing for WNV should be done on the following patients:

- all hospitalized patients with encephalitis
- all hospitalized patients with acute flaccid paralysis
- all hospitalized adults ( $\geq 18$  years of age) with aseptic meningitis

WNV testing should also be considered in select patients <18 years of age with aseptic meningitis (especially with negative enterovirus polymerase chain reaction (PCR) and/or exposure to mosquitoes) and select patients with prolonged febrile illness ( $\geq 7$  days).

In 2006, the number of confirmed WNV infections in Orange County decreased to seven, as compared to 17 in 2005 and 64 in 2004. Of the six symptomatic cases reported last year, two were classified as West Nile fever and four were classified as West Nile neuroinvasive disease. The median age for all Orange County cases reported in 2004–2006 was 57 years and males accounted for 72% of all cases.

Information on mandated disease reporting, like West Nile infection, is found on the Health Care Agency website at [www.ochealth-info.com/epi/report-diseases.htm](http://www.ochealth-info.com/epi/report-diseases.htm).

### WNV Cases 2004-2006

	2004	2005	2006
United States	2539	3000	4180
California	830	935	276
Orange County	64	17	7

Warny M, Pepin J, et al. Toxin production by an emerging strain of *Clostridium difficile* associated with outbreaks of severe disease in North America and Europe. *Lancet* 2005;366:1079-1084.

The Changing Epidemiology and Severity of *Clostridium difficile*-Associated Disease March 2006. Available at: [www.rmei.com/cdad507/Start.html](http://www.rmei.com/cdad507/Start.html).

**Third Quarter (Weeks 1-39)**  
**Number of Cases by Year of Report**

DISEASE	2006	2005	2004	2003
AIDS <sup>1</sup>	209	125	145	172
AMEBIASIS	8	8	11	5
CAMPYLOBACTERIOSIS	180	134	184	196
CHLAMYDIA <sup>2</sup>	6175	5600	4713	4157
CRYPTOSPORIDIOSIS	9	5	9	14
E-COLI O157:H7	9	7	8	6
FOOD POISONING OUTBREAKS	18	19	22	31
GIARDIASIS	90	77	74	91
GONOCOCCAL INFECTION <sup>2</sup>	846	875	710	540
H-FLU, INVASIVE DISEASE (<30 y)	10	5	3	4
HEPATITIS A (acute)	30	32	28	56
HEPATITIS B (acute)	15	9	21	21
HEPATITIS B (perinatal, acute & chronic) <sup>3,4</sup>	1032	388	778	900
HEPATITIS C (acute)	1	2	4	3
HIV <sup>5</sup>	NA	NA	NA	NA
KAWASAKI DISEASE	16	18	16	20
LISTERIOSIS	9	5	13	4
MALARIA	8	6	9	6
MEASLES (RUBEOLA)	0	0	0	0
MENINGITIS, TOTAL	132	236	413	471
ASEPTIC MENINGITIS	107	205	388	433
MENINGOCOCCAL INFECTIONS	13	7	16	15
MUMPS	2	3	2	2
NON-GONOCOCCAL URETHRITIS	469	325	382	428
PELVIC INFLAMMATORY DISEASE	32	39	38	30
PERTUSSIS	42	62	80	74
RUBELLA	0	0	0	0
SALMONELLOSIS	221	191	196	171
SHIGELLOSIS	40	78	75	86
STREP, INVASIVE GROUP A	26	29	31	40
SYPHILIS, TOTAL	196	270	230	210
PRIMARY	22	23	9	11
SECONDARY	41	56	21	14
EARLY LATENT	35	38	21	16
LATENT	16	14	11	10
LATE LATENT	78	136	164	155
CONGENITAL	2	3	3	3
NEUROLOGICAL	2	0	1	1
TUBERCULOSIS	152	116	120	133
TYPHOID FEVER, CASE	2	6	3	7
WEST NILE VIRUS INFECTIONS	6	14	30	NA
WEST NILE FEVER	2	4	10	NA
WEST NILE NEUROINVASIVE DISEASE	3	10	18	NA
BLOOD DONOR POSITIVE	1	0	2	NA

<sup>1</sup>Source: CDC HARS Reportig System for months of entry Jan-Sep. tions reports from 2005 to 2004.  
<sup>2</sup>Due to delays in reporting, 2004 incident chlamydia and gonococcal infections were reported in 2005. This table reallocates those infec- tions reports from 2005 to 2004.  
<sup>3</sup>Previously included in Hepatitis B acute or chronic totals. Separate reporting started in 2002 for perinatal Hepatitis B.

<sup>4</sup>From Sep 2004 - Oct 2005, E&A temporarily stopped reporting chronic hepatitis B except for mothers of childbearing age.  
<sup>5</sup>The County of Orange began reporting HIV cases by name in Nov

2006; all previous cases that were reported without a name have been redacted.  
 NA= Not Available

# PUBLIC HEALTH Bulletin

COUNTY OF ORANGE • HEALTH CARE AGENCY

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