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EPI Examiner

A Monthly Epidemiology Report

APRIL 2009

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Monthly Report	762-3891

Edited by Lashawnda White, M.P.H.

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April Disease Summary

Confirmed and Probable notifiable disease cases were analyzed by date of event for this report (Table 1). Diseases were categorized as higher than expected using a two standard deviation threshold and as significantly higher than expected according to Pearson's chi-square test for fit of a distribution.

The number of Group A *Streptococcus* (GAS) cases were significantly higher than expected during April. Seven were reported, which is six more than were reported in February and March. All of the cases were hospitalized. The disease caused by the GAS in most of the cases was primary sepsis with no focus. No cases were known to be involved in an outbreak or have resided in a nursing home.

Broward had 7 confirmed cases of the novel influenza virus H1N1(aka swine flu) in April. Suspected H1N1 cases were not included in the table because of varying case definitions at the start of reporting. Giardiasis, hepatitis A, legionellosis, meningitis, mercury poisoning, typhoid fever and possible exposure to rabies were all higher than the five year average for April, but none were significantly higher, nor exceeded the 2 standard deviation threshold.

Group A *Streptococcus* (GAS)

Group A streptococcal infections are caused by the spherical gram positive bacterium, streptococcus pyogenes. The bacterium is often found in the throat and on the skin without causing symptoms of illness. It is the cause of many different diseases ranging from mild to severe. Most GAS infections are relatively mild illnesses such as "strep throat," or impetigo. Severe, sometimes life-threatening, GAS disease may occur when bacteria get into parts of the body where bacteria usually are not found, such as the blood, muscle, or the lungs. These infections are termed "invasive GAS disease." Two of the most severe, but least common, forms of invasive GAS disease are necrotizing fascitis and streptococcal toxic shock syndrome. Necrotizing fasciitis (occasionally described by the media as "the flesh-eating bacteria") is a rapidly progressive disease which destroys muscles, fat, and skin tissue. Streptococcal toxic shock syndrome (STSS) results in a rapid drop in blood pressure and causes organs (e.g., kidney, liver, lungs) to fail. STSS is not the same as the "toxic shock syndrome" due to the bacteria *Staphylococcus aureus* which has been associated with tampon usage. While 10%-15% of patients with invasive group

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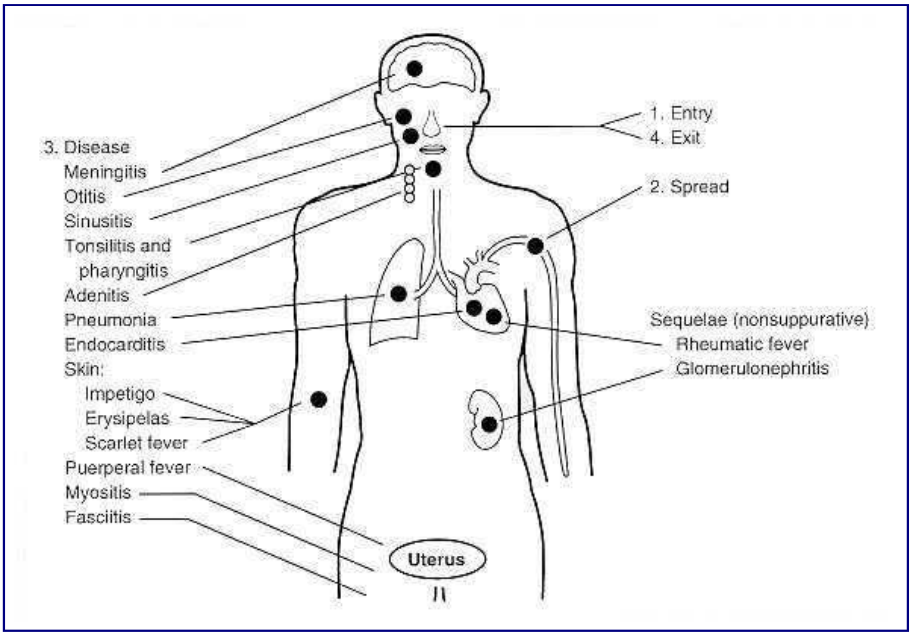
Group A *Streptococcus* (GAS) continued

Figure 1. Diseases Caused by Group A *Streptococcus*



Picture from Baron's Medical Microbiology

group A streptococcal disease die from their infection, approximately 25% of patients with necrotizing fasciitis and more than 35% with STSS die. Sepsis is also commonly caused by GAS.

Signs and Symptoms

Signs and symptoms depend on the type of illness caused by group A strep. Strep throat causes fever, sore throat, and swollen lymph glands. Strep skin infection causes red, weeping skin sores. Scarlet fever causes all the symptoms of strep throat plus a characteristic rash on the neck, chest, skin folds, and inner thighs. The rash is often easier felt than seen.

Early signs and symptoms of necrotizing fasciitis are fever, severe pain, swelling, heat, and redness at a wound site. Necrotizing fasciitis is known for the speed with which it attacks and destroys muscle and flesh.

Early signs and symptoms of streptococcal toxic shock syndrome often include fever, dizziness, and confusion. Streptococcal toxic shock syndrome has no sign or symptom that distinguishes it from other illnesses.

Complications from infection include acute rheumatic fever, post-streptococcal glomerulonerphritis(inflammation of the kidneys), shock, multisystem organ failure and death.

The incubation period is 1-3 days.

Transmission

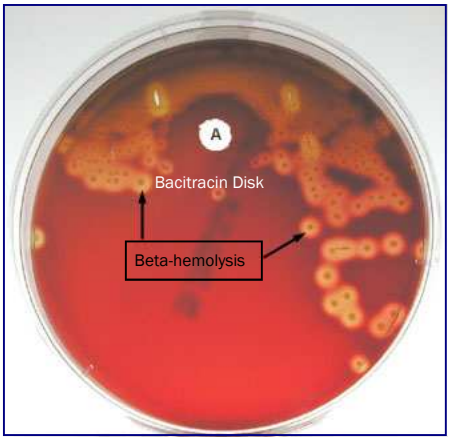
GAS is spread through direct contact with mucus from the nose or throat of persons who are infected or through contact with infected wounds or sores on the skin. Ill persons, such as those who have strep throat or skin infections, are most likely to spread the infection. Persons who carry the bacteria but have no symptoms are much less contagious. Treating an infected person with an antibiotic for 24 hours or longer generally eliminates their ability to spread the bacteria. However, it is important to complete the entire course of antibiotics as prescribed. It is not likely that household items like plates, cups, or toys spread these bacteria.

In untreated, uncomplicated cases, GAS is contagious for 10-21 days and in untreated conditions with purulent dicharges, weeks or months.

Diagnosis and Treatment

Diagnosis is made by isolating the bacteria by culture from a normally sterile site. GAS infections can be treated with many different antibiotics. For STSS and necrotizing fasciitis, high dosage penicillin and clindamycin are recommended. For those with very severe illness, supportive care in an intensive care unit may also be needed. For persons with necrotizing fasciitis, early and aggressive surgery is often needed to remove damaged tissue and stop disease spread. Early treatment may reduce the risk of death from invasive group A streptococcal disease. However, even the best medical care does not prevent death in every case.

Figure 2. *Streptococcus pyogenes* Growing on Blood Agar



A gram stain is performed to show gram positive, cocci in chains. Then the bacteria is added to blood agar with bacitracin antibiotic disk. Group A Streptococcus is characterized by it's ability to destroy red blood cells and leave a transparent color in the agar around the colonies which is called beta-hemolysis. The bacteria will not grow around the antibiotic bacitracin. Serology involves testing for the presence of group A specific polysaccharide in it's cell wall.

Picture from Doc Kaiser's Microbiology Page

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Group A Streptococcus (GAS) cont. . . .

Prevention

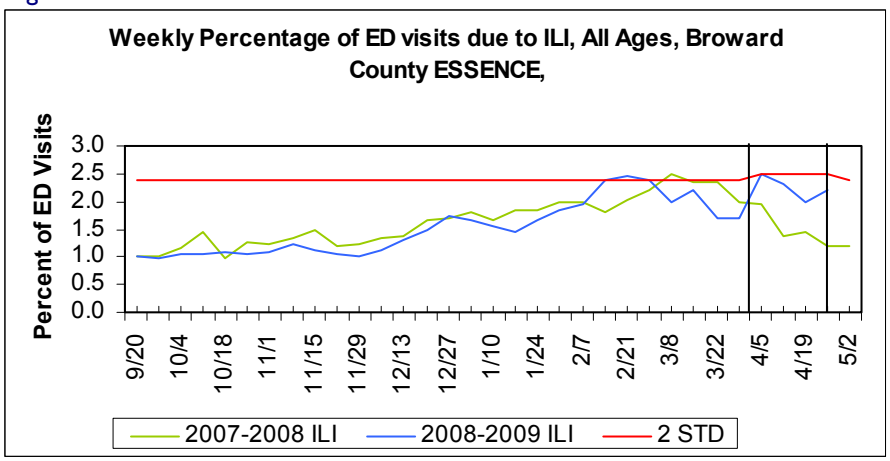
The spread of all types of GAS infection can be reduced by good hand washing, especially after coughing and sneezing and before preparing foods or eating. Persons with sore throats should be seen by a doctor who can perform tests to find out whether the illness is strep throat. If the test result shows strep throat, the person should stay home from work, school, or day care until 24 hours after taking an antibiotic. All wounds should be kept clean and watched for possible signs of infection such as redness, swelling, drainage, and pain at the wound site. A person with signs of an infected wound, especially if fever occurs, should immediately seek medical care. It is not necessary for all persons exposed to someone with an invasive group A strep infection (i.e. necrotizing fasciitis or strep toxic shock syndrome) to receive antibiotic therapy to prevent infection. However, in certain circumstances, antibiotic therapy may be appropriate. That decision should be made after consulting with a doctor.

Sources: http://cdc.gov/ncidod/dbmd/diseaseinfo/Groupastreptococcal_g.htm,

http://en.wikipedia.org/wiki/Streptococcus_pyogenes

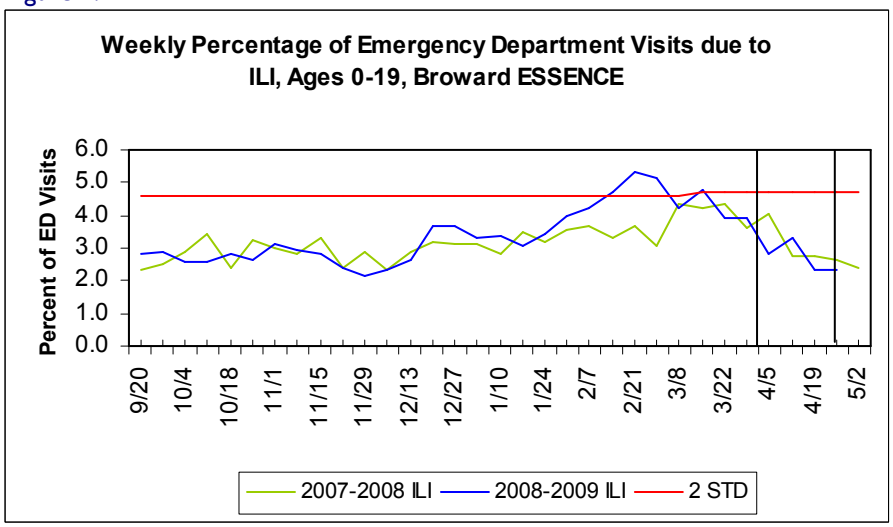
Broward County Influenza Surveillance

Figure 3.



In April, the incidence of ILI hospital visits was higher than last year. Incidence exceeded 2 standard deviations at the beginning of the month, then decreased until the end of the month when visits began to rise.

Figure 4.



Overall, incidence for children and youth was lower this month, than it was last year same time.

Selected Reportable Communicable Diseases and Other Conditions Broward County Health Department

	Apr-09	Mar-09	YTD Apr-09	Apr-08	Apr-07	Apr-06	Apr-05	Apr-04	5-Yr Average (Expected #)
Animal Bite, PEP	0	0	0	1	3	0	4	0	1.6
Brucellosis	0	1	1	0	0	0	0	0	0
Campylobacteriosis	4	3	26	5	9	5	4	4	5.4
Ciguatera	0	0	0	1	0	0	0	0	0.2
Cryptosporidosis	0	0	2	2	3	2	2	2	2.2
Cyclosporiasis	1	0	1	0	0	0	10	0	2
Dengue Fever	0	0	2	0	0	0	0	0	0
E. Coli	0	1	3	0	3	0	1	0	0.8
EHEC O157:H7	0	0	0	0	0	2	0	0	0.4
Giardiasis	7	9	31	6	7	1	6	4	4.8
Haemophilus Influenzae Invasive	2	4	11	2	2	2	2	3	2.2
Hepatitis A	4	5	17	2	1	2	1	5	2.2
Hepatitis B Acute	3	4	17	2	1	2	5	5	3
Hepatitis B Chronic	7	14	99	5	0	0	1	1	1.4
Hepatitis B HBsAg	3	1	14	4	3	0	4	4	3
Hepatitis C Chronic	1	30	323	144	124	76	157	128	125.8
Lead Poisoning	0	0	6	2	4	3	2	3	2.8
Legionellosis	2	0	3	0	1	2	0	3	1.2
Listeriosis	0	0	0	0	0	1	0	0	0.2
Malaria	0	2	10	2	0	0	0	1	0.6
Meningitis Listeria	0	0	0	0	0	0	1	0	0.2
Meningitis Other	3	3	7	0	1	4	1	2	1.6
Meningitis Strep Pneumoniae	0	0	0	1	2	1	0	1	1
Meningococcal Disease	0	1	3	0	1	1	1	0	0.6
Mercury Poisoning	1	0	2	0	0	0	0	0	0
Novel Influenza (Confirmed)	7	0	7	0	0	0	0	0	0
Pertussis	0	1	2	0	0	0	1	0	0.2
Rabies, Possible Exposure	2	0	6	0	0	0	0	0	0
Salmonellosis	27	30	109	27	33	26	23	16	25
Shigellosis	6	4	12	7	77	3	4	7	19.6
Staphylococcus Aureus	0	0	1	0	0	0	0	0	0
Streptoccal Pnemoniae(Drug Resistant)	7	6	39	8	11	7	1	10	7.4
Strep Pnemoniae(Susceptible)	4	4	19	2	6	6	5	3	4.4
Streptoccal Disease(Invasive Group A)	7	1	11	2	4	1	3	2	2.4
Typhoid Fever	1	0	1	0	0	0	0	0	0
Varicella	4	9	19	13	7	0	0	0	4
Total	**103**	**133**	**804**	**238**	**303**	**147**	**239**	**204**	**226.2**

Data accessed on 6/1/09 from FL Merlin Communicable Disease Reporting System.

These diseases are significantly higher than expected for the month.

Table 2. Broward County ESSENCE Alerts, April 1 - April 30, 2009

	Syndrome										
Alert	Influenza like Illness	Botulism-like	Injury	Fever	Gastro-intestinal	Hemorrhagic Illness	Neurological	Rash	Respiratory	Shock/ Coma	Other
Low Level	5	3	0	0	3	2	4	1	4	2	0
High level	0	1	0	4	3	0	1	1	0	0	0

Electronic Surveillance System for the Early Notification of Community-based Epidemics (ESSENCE)

On a daily basis, 15 Broward County hospitals automatically transmit de-identified electronic emergency department chief complaint data to the BCHD. Each chief complaint is placed into one of 11 syndrome categories using ESSENCE, a data management/analysis system developed by Johns Hopkins University in conjunction with the Department of Homeland Security. ESSENCE performs automatic data analysis, establishing a baseline with a 28-day average. Daily case data is then analyzed against this baseline to identify statistically significant increases. A yellow flag indicates a mild alert and a red flag indicates a high alert. Daily, a BCHD analyst evaluates all alerts to determine epidemiologic clustering by zip code, hospital visited, chief complaint, and the time visited at the ER.

Alerts for all hospital visits: 3 low, 2 high