OAKLAND COUNTY HEALTH DIVISION

EPI UPDATE

4th Quarter 2009
Professional Use Only

2009-2010 Chickenpox Update

Shane Bies, MPH

Since the licensure of the varicella vaccine in 1995, the annual incidence of reported cases of chickenpox in Oakland County has declined over 96% from a high of 6,566 during calendar year 1993 to only 234 for all of 2009. Reporting of chickenpox cases switched from aggregate counts to individual name based reporting at the beginning of the school year in 2005-2006 to more accurately asses the occurrence of disease and also provide more detailed health information for each case.

Each school year, an expected decline of chickenpox cases is usually seen. However, when reports of chickenpox cases for all ages of the recent school year-to-date (August 30 – February 3) was compared to the same time period for previous school years, the expected drop for 2009-10 did not occur (see Figure 1).

Most of the cases reported for the current 2009-2010 school year have been school aged children between 5-18 years (87% of the 127 cases). This is expected since schools are the primary source for reports of chickenpox. For those school aged cases of chickenpox with available vaccination information, only 67% report having received any varicella vaccination and only 19% report having received the full two dose varicella vaccination regiment. The most frequently reported reasons for chickenpox cases receiving no varicella vaccination were "parent/patient refusal" (45%), "parent/patient forgot to vaccinate" (18%) and "medical contraindication" (15%).

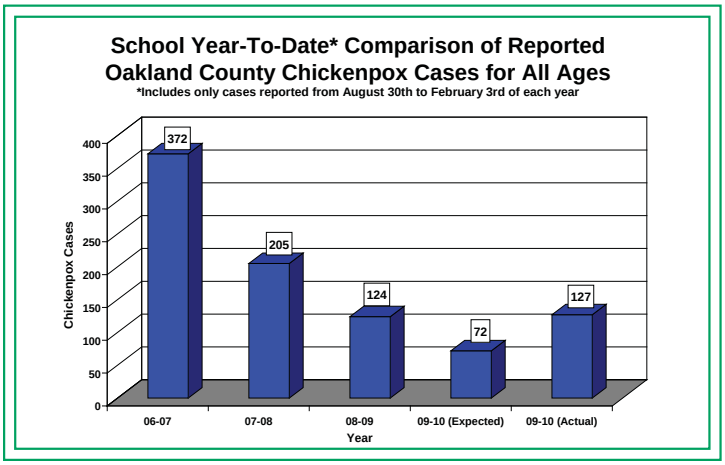

Figure 1

The Advisory Committee for Immunization Practices (ACIP) recommends varicella vaccination for all children without contraindications at 12-15 months of age and a second dose administered between 4-6 years of age. Beginning January 1, 2010, Michigan law now requires: all children entering kindergarten; 6th grade; or children in any grade changing school districts, to have documentation of receiving two doses of varicella vaccine. Sustained improvement of varicella vaccination rates, especially the recommended second dose, will help to continue the decline of chickenpox disease.

For further detailed information regarding chickenpox, go to: www.cdc.gov/vaccines/vpd-vac/varicella/default.htm.

In This Issue

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Streptococcus pneumonia and Influenza

Julie Vaishampayan MD, MPH

During the recent 2009 H1N1 flu outbreak, some areas of the country reported an increase in invasive pneumococcal disease (IPD). We all know that flu season is also pneumococcal season but I don't think any of us realize how closely these two diseases are linked.

Invasive pneumococcal disease (IPD) became a reportable disease in 2005. The case definition of IPD requires S. pneumonia to be isolated from an "otherwise sterile site" such as blood or CSF. The definition precludes any pneumococcal disease diagnosed solely on a sputum or BAL culture. The exclusion of BAL specimens is debatable but for the purposes of IPD reporting, BAL fluid is not considered to be from an otherwise sterile site.

The Denver Metropolitan area reported an increase in serious cases of pneumococcal disease coincident with an increase in influenza hospitalization in 2009. The majority of these cases were seen in the 20-59 year age group (62%). Having read this, I examined Oakland County Health Division (OCHD) data.

Figure 1 compares the average number of cases of IPD reported in 2005-2008 to cases reported in 2009. While there is usually a peak in March, the peaks observed in May and October are not usually observed.

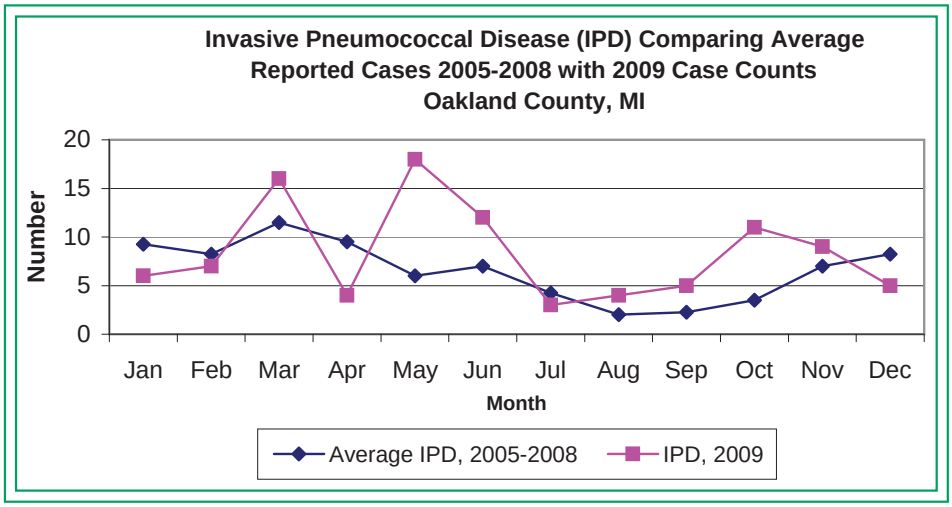

Figure 1

Figure 2 compares 2009 reports of IPD and influenza case reports. The peaks of IPD and influenza match quite well. The small peak in influenza reports in February compared to May and October does not reflect actual disease activity; this is a reflection of a change in reporting practice. Until the pandemic strain emerged, individual case reports of influenza were rarely received. State law only requires aggregate reporting of seasonal influenza, not individual name-based reports. When examining the ages of those with IPD, Oakland County did not see the same age distribution change that the Denver Metro area did. IPD in 2009 matched the age distribution observed in previous years, occurring most commonly in those 65 years of age and older.

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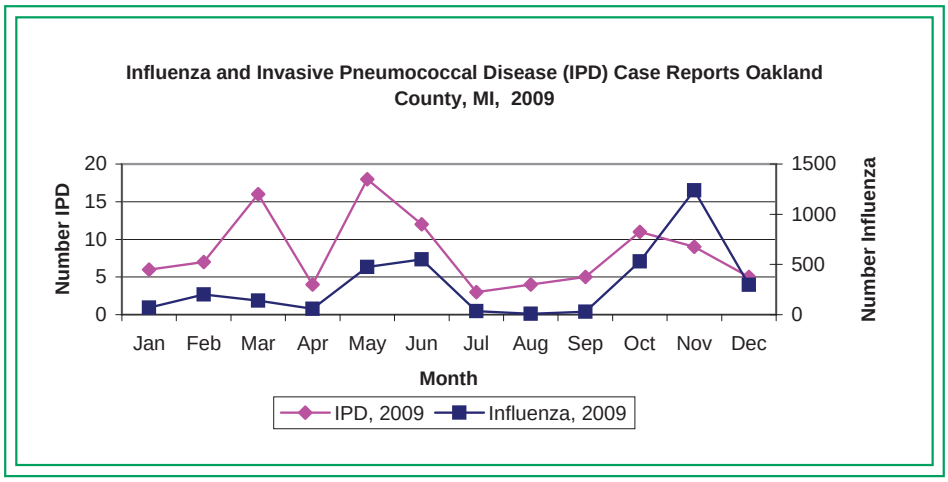

Figure 2

OAKLAND COUNTY HEALTH DIVISION - CD UNIT, 248.858.1286
Julie Vaishampayan MD, MPH - Chief of Medical Services
Shane Bies, MPH - Epidemiologist
Richard Renas, MPH - Epidemiologist
Nancy Benavides, RN, BSN - Communicable Disease Nurse
Carolyn Padro, RN, BSN - Communicable Disease Nurse
Noel Shearer, RN, BSN - Communicable Disease Nurse

After hours call: 248-858-0931, ask for the health administrator on call

Streptococcus pneumonia

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IPD is a vaccine preventable disease. Two vaccines are currently FDA approved to prevent pneumococcal infection. PCV7 is a conjugate vaccine covering seven different polycapsular types and is recommended for all children under the age of five years. The series is recommended to be given at two, four, and six months of age with a booster at 12-15 months. PPSV23 is a polysaccharide vaccine covering 23 different capsular types.

PPSV23 is recommended for:

- People who are 65 years of age and older
- People two years of age and older who have a chronic illness such as:
  - cardiovascular or lung disease
  - sickle cell disease
  - diabetes
  - alcoholism
  - chronic liver disease
  - cerebrospinal fluid (CSF) leak
  - a cochlear implant
- People two years of age and older with a weakened immune system due to illnesses such as:
  - HIV infection
  - AIDS
  - chronic renal failure
  - nephrotic syndrome
  - organ or bone marrow transplantation
  - Hodgkin's disease
  - leukemia
  - lymphoma
  - multiple myeloma
  - generalized malignancy
- Those receiving immunosuppressive therapy (e.g., steroids)
- Those who have had their spleen removed or whose spleen is dysfunctional due to an illness such as sickle cell disease
- Residents of nursing homes or long-term care facilities
- **People 19 through 64 years of age who smoke cigarettes or have asthma**

Persons aged 19 through 64 years of age who are current smokers or have a diagnosis of asthma comprise a group of individuals who are often not vaccinated with PPSV23.

When vaccinating a child with PPSV23 please remember that the interval between PCV7 and PPSV23 vaccination is two months. PPSV23 and PCV7 cannot be given simultaneously. A new conjugate vaccine, PCV13, is expected to receive FDA approval soon. It will cover an additional five polycapsular types, replacing PCV7 as the recommended childhood vaccine.

Pertussis in Oakland County Prevalence and Review

Rick Renas, MPH

Pertussis (whooping cough) is a serious disease in all ages but is particularly dangerous in infants and small children who are more likely to experience complications and/or death. Children partially protected by the vaccine, adolescents and adults may have milder disease but may have a cough lasting up to three months or longer (a.k.a. 100 day cough). These two groups represent a reservoir for infants, children and vulnerable individuals.

The prevalence of pertussis in Oakland County (OC) increased dramatically in 2009 as can been seen in the graph below.

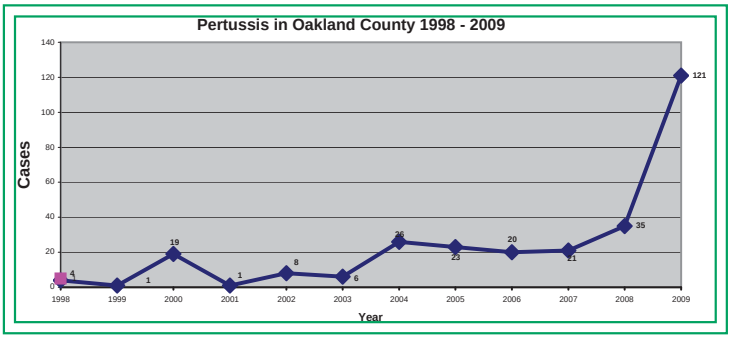

FIgure 1

The 121 cases reported in 2009 represent a 350% increase over cases seen in 2008 and comprise 41% of all reports since 1998 (n=293). The profile of the 2009 pertussis cases in OC is:

Gender: Female = 70 (57.9%); Male = 51 (42.1%)

Race: White = 98 (81.0%); Black = 11 (9.0%); Unk = 12 (10.0%)

Age: <1 yr = 16 (13.2%); 1-9 yr = 37 (30.6%); 10-19 yr = 16 (13.2%); >20yr = 52 (43.0%)

Symptoms: Cough = 120 (99.2%); Paroxysms = 111 (91.7%); Whoop = 43 (35.5%); PTV = 56 (46.3%); Apnea = 50 (41.3%)

Cough duration ranged from 7-210 days with a median of 25 days and a mean of 33.5 days. Eighteen (14.9%) cases were hospitalized with nine being <1 yr of age. No deaths were reported.

Of the 121 cases 77 (63.6%) of them reported having received any pertussis containing vaccine (PV). Of those 77 cases vaccination records were available for 52 individuals (67.5%) of which 41 persons (78.9%) received ≥ 3 doses of PV. Alternatively, 41 cases out of the total 121 cases (33.8%) are documented as receiving three or more doses. Slightly more than half of all pertussis cases reported having received any PV with even fewer having records of receiving ≥ 3 doses. Obviously failure to vaccinate is contributing to disease incidence.

Ninety-nine cases (81.8%) reported some form of laboratory testing. Polymerase chain reaction (PCR) was utilized for 56 cases (53 or 94.6% positive). Culture was also employed (n=8) and was positive 50% of the time.

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Pertussis

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Serology also was performed (n=35) however it is important to remember that serology is not recommended by the Centers for Disease Control and Prevention (CDC) for the confirmation of pertussis.

Regarding prophylaxis of the 121 cases 115 (95%) received antibiotic therapy. One hundred and three cases (85.1%) had contacts that required follow-up facilitating antibiotic prophylaxis. The range of the number of contacts per case was 0-19 persons with the median being 3 persons and the mean 3.5 persons.

Overall pertussis has been increasing in OC since 1998. This trend is a reflection of national reporting when 25,827 cases were reported in 2004 (the highest since 1959) and almost as many cases in 2005. Lower levels were seen in 2007 (10,454) and 2008 (13,278). National data for 2009 is not yet available. Michigan too has seen increases with more than twice as many cases reported (n=210) from July – December 2008 than in the first half of the year (n=97). The upward trend continued throughout 2009 resulting in 900 cases reported in Michigan, a 286% increase over that seen in 2008 (n=315).

The transmission setting most commonly reported was home with 33 cases (42.8%). Twenty-four cases or 19.8% were epi-linked to a lab confirmed case. From 2004 through 2006 a total of 82 deaths from pertussis were reported to the CDC. Children 3 months of age or younger accounted for 69 (84%) of these deaths, likely the result of household exposure to a sibling or parent who had pertussis or an illness that was probably pertussis.

The role of adolescents and adults in the transmission of pertussis is increasing. Figure 2, "Reported Pertussis by Age Group, 1990-2007, US" depicts the proportion of cases who are >18 yr. steadily increasing over time. Today there are boosters for both groups readily available that contain tetanus, diphtheria and accellular pertussis (Tdap).

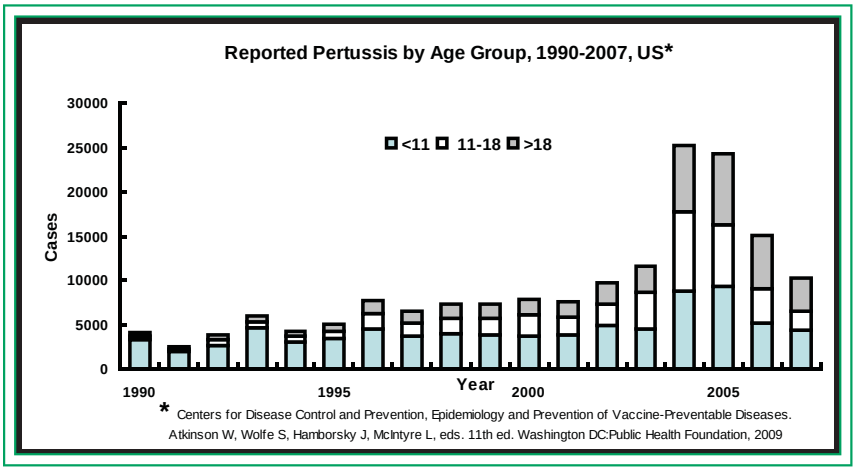

FIgure 2

For further information on pertussis vaccination and laboratory testing please call the OCDH Communicable Disease Unit at 248-858-1286 and go to the following websites.

www.cdc.gov/vaccines/vpd-vac/pertussis/default.htm
www.michigan.gov/documents/mdch/5Pertussis_Rev2008_231443_7.pdf

For More Information:

Pontiac
1200 North Telegraph Road
Pontiac, MI 48341-0432
248.858.1280
Toll Free 1.888.350.0900
FAX 248.858.0178

Southfield
27725 Greenfield Road
Southfield, MI 48076-3625
248.424.7000
Toll Free 1.888.758.9925
FAX 248.424.7144

Walled Lake
1010 E. West Maple Road
Walled Lake, MI 48390
248.926.3300
FAX 248.960.7444

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www.oakgov.com/health

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Influenza 2009-2010 Winter Summary*

**This article is an updated version of a summary written in the fall*

Shane Bies, MPH

Almost all laboratory reported cases of influenza for the current season which began on September 1, continue to be positive for 2009 novel H1N1 or influenza A unsubtyped. More than 99% of over 2,100 laboratory results reported to the Oakland County Health Division were positive for 2009 novel H1N1 via PCR, or positive for influenza A not subtyped via another testing method such as a rapid antigen screen. Less than 1% of test results were positive for influenza B or positive for influenza A, but with a concurrent negative result for 2009 novel H1N1.

Influenza surveillance indicators showed a peak of activity at the end of October and beginning of November (see Figure 1). Emergency department registrations due to constitutional complaints peaked the week of October 25 and influenza-like-illness in schools and influenza positive laboratory results, based upon the date of collection, both peaked the week of November 11. Since that peak, influenza surveillance indicators showed a steep decline of activity and remain at or below baseline levels. Due to the unpredictable nature of influenza, it is unknown when another peak may occur this season.

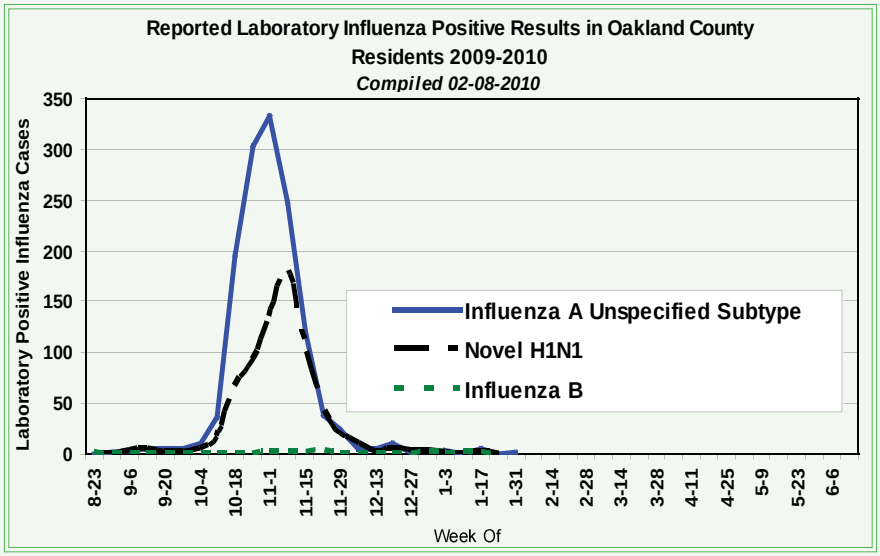

Figure 1

Throughout the state of Michigan, more information is gathered for people who are hospitalized and have a laboratory test positive for influenza. Since August 31, 180 people have been hospitalized in Oakland County with a concurrent positive influenza laboratory test. Almost all influenza related hospitalizations, except for three with influenza B results, have been positive for 2009 novel H1N1 or influenza A not subtyped.

Of those hospitalized patients with information available:

- 89% were <65 years old with an average age of 34 years and a range of 1 month – 87 years
- 55% were female
- Length of hospitalization was 5.2 days on average with a range of 1 – 25 days
- 29% were admitted to intensive care
- 11% required mechanical ventilation
- 0.8% required ECMO
- 11% were diagnosed with ARDS
- 6.5% were diagnosed with multi-organ dysfunction syndrome

Of those hospitalized patients with information available, the following risk factors for complications with influenza were reported:

- 32% had asthma
- 20% had a chronic underlying lung disease
- 22% had a chronic underlying heart disease
- 10% had a chronic underlying metabolic disease including diabetes
- 8% had been diagnosed with cancer in the last 12 months
- 10% had an other immunosuppressive condition
- 32% were obese and based upon their reported body mass index
- 13% of 91 females were pregnant

Six deaths of Oakland County residents associated with laboratory confirmed positive 2009 H1N1 novel influenza have been reported since August 31 which totals nine deaths since April. Age ranged from 31 to 74 years with a median of 54 years. Average length of hospitalization was 23 days and 67% were male.

More detailed and up to date information of influenza surveillance is available online at:
www.michigan.gov/flu
www.cdc.gov/flu/weekly/fluactivity.htm

Oakland County Selected Disease Data

Selected Disease	2007	2008	2009
AIDS[1]	58	55	45
HIV[2]	88	96	107
Amebiasis	2	4	0
Blastomycosis	0	1	1
Campylobacter	102	130	106
Chickenpox	528	370	234
Chlamydia	3352	3513	3633
Cryptococcosis	5	5	3
Cryptosporidiosis	5	5	2
Dengue Fever	2	3	1
E.coli 0157:H7	6	14	8
Giardiasis	49	49	65
Gonorrhea	993	1154	979
Guillan-Barre Syndrome	3	4	8
Hepatitis A	4	12	1
Hepatitis B - Chronic	289	264	225
Hepatitis B - Acute	13	9	14
Hepatitis C –Acute	0	5	9
Hepatitis C - Chronic	590	1041	532
H. influenzae, invasive	4	2	0
Histoplasmosis	5	2	3
Kawasaki	5	7	8
Legionellosis	32	24	23
Listeriosis	2	5	6
Lyme Disease	2	6	3
Malaria	3	4	6
Measles	1	0	0
Meningitis, viral (aseptic)	139	124	106
Meningococcal Disease	4	3	2
Mumps	1	1	0
Pertussis	21	43	119
Rabid Animals	12	9	11
Salmonellosis	106	106	124
Shigella	9	16	7
Syphilis (Primary & Secondary)	3	5	19
S. pneumoniae, invasive	74	97	99
Toxic Shock	0	5	1
Tuberculosis - Pulmonary	21	11	13
Tuberculosis - ExtraPulmonary	7	13	5
Typhoid Fever	3	2	3
West Nile Virus	2	0	0
Yersinia enteritis	1	3	5

Note: Data may change slightly as new information becomes available

[1]Includes all newly diagnosed AIDS cases, including those diagnosed with HIV at the same time as their AIDS diagnosis, based on date of AIDS diagnosis

[2]Includes all newly diagnosed HIV cases, including those diagnosed with AIDS at the same time as their HIV diagnosis, based on date of HIV diagnosis