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West Virginia EPI-LOG

2012-2013 flu season draws to a close

When discussion surrounds the flu season, the one thing that is predictable is that flu is unpredictable. The 2012-13 influenza season proved this statement to be true as influenza activity peaked nearly six weeks earlier than what West Virginia has seen on average in the past 10 years, with the exception to the 2009 pandemic. There has been a lot of attention this year regarding the severity of the flu season with misconceptions surrounding people getting sick from the flu despite receiving their flu shot.

There are several reasons why someone might get a flu-like illness, even after they have been vaccinated against flu. One reason is that some people can become ill from other respiratory viruses besides flu which cause symptoms similar to flu. The flu vaccine only protects against influenza viruses, not other viruses. Another explanation is that it is possible to be exposed to influenza viruses, which cause the flu, shortly before getting vaccinated or during the two-week period after vaccination that it takes the body to develop immune protection. This exposure may result in a person becoming ill with flu before protection from the vaccine takes effect. A third reason why some people may experi-

*(See **Flu Season**, page 2)*

Statewide Disease Facts & Comparisons

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(*Flu Season*, *continued from page 1)*

ence flu like symptoms despite getting vaccinated is that they may have been exposed to an influenza virus that is very different from the viruses the vaccine is designed to protect against. Early estimates from the Centers for Disease Control and Prevention (CDC) show that the current influenza vaccine was shown to be approximately 60% effective against protecting you from the flu, which is comparable to previous seasons. The final explanation for experiencing flu-like symptoms after vaccination is that unfortunately, the flu vaccine doesn't always provide adequate protection against the flu. This is more likely to occur among people that have weakened immune systems or people age 65 and older. Although the influenza vaccine is not a perfect tool, it is still the best way to protect yourself from getting the flu, and even if you were to get sick with the flu; the influenza vaccine will help reduce the severity and duration of your illness.

Flu season is drawing to a close. Surveillance data indicates that West Virginia influenza activity peaked as of late December early January and has steadily declined ever since. Influenza activity this past season was characterized as moderately severe when compared to past flu seasons. The predominant strain circulating this season in West Virginia is the influenza AH3. Influenza A seasons are typically characterized as severe with more hospitalizations and deaths. While it had appeared that flu season was going to fizzle out in early February, the number of respiratory specimens testing positive for Influenza B nearly tripled in March, leaving West Virginians with a second wave of elevated flu activity. Influenza B doesn't often dominate during flu seasons. However, in past flu seasons (2005-06) West Virginia saw an increase in influenza B towards the end of the season as we have seen this season. Influenza B tends to be written off as more mild than A, affecting predominately school aged children.

The cumulative rate for influenza associated hospitalizations was at 42.3 per 100,000 people in the US. Over half of hospitalizations were among those people 65 years of age and older. Influenza appeared to hit our oldest population the hardest. The number of influenza associated outbreaks that the state and local health departments investigated was at record numbers. Similar trends were seen nationwide, with states reporting on average over 20% of the outbreaks they investigated this past year were due to influenza in long-term care facilities. This number is up from 7% reported in 2010-11 season. A total of 111 influenza-related pediatric deaths have been reported during the 2012-13 season. Although there have been no influenza-related pediatric deaths reported in West Virginia, these deaths are a somber reminder of the danger influenza poses on children. Approximately 90% of reported influenza-related pediatric deaths have been in children who were not vaccinated against influenza.

Although the flu activity is tapering off in West Virginia, the threat of getting influenza still remains. As always, get your flu shot every year. Getting vaccinated is the first and most important step in protecting against this serious disease. Vaccination efforts should continue as long as influenza viruses are circulating.

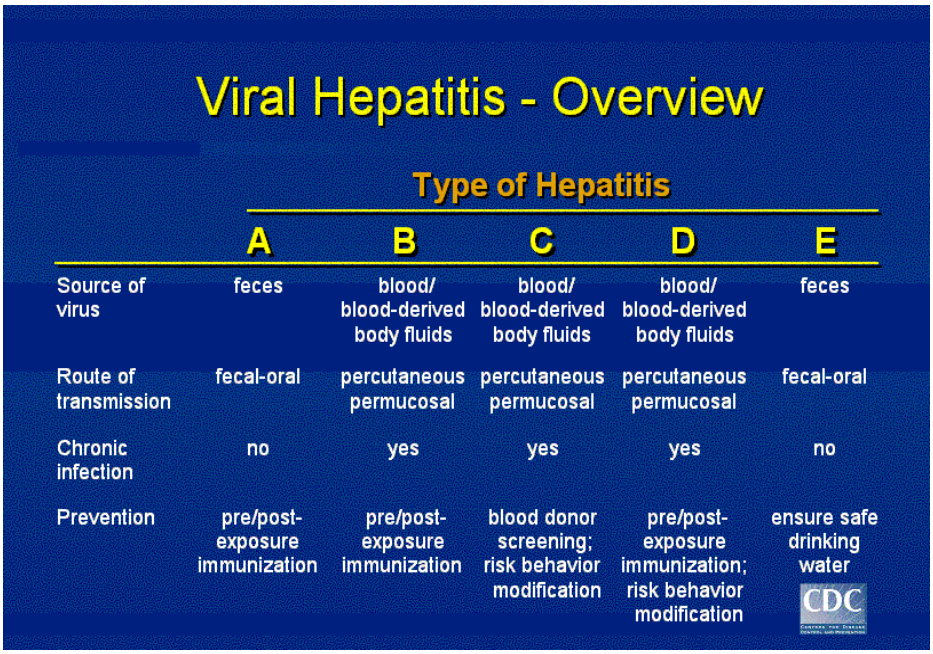
You can help stop the spread of influenza and other diseases by following these recommendations:

If you get sick with flu-like illness, stay home for at least 24 hours after your fever is gone except to get medical care or for other necessities, practice proper cough and sneeze etiquette to prevent the spread of germs, wash your hands regularly, and clean and disinfect frequently touched surfaces at home, work or school, especially when someone is ill. While not a substitute for vaccination, these steps can help prevent the spread of respiratory viruses like influenza.

High hepatitis rates in West Virginia underscore National Hepatitis Month

The West Virginia Department of Health and Human Resources Bureau for Public Health is reminding residents that May is National Hepatitis Awareness Month.

Hepatitis is an inflammation of the liver that can be caused by viruses such as hepatitis A, B and C and prevents the liver from supporting proper digestion of food, storing energy, and removing poisons from the body. State Health Officer and Commissioner for Public Health Dr. Marian Swinker says, "Hepatitis A, B, and C are the most common types of viral hepatitis. West Virginia has the highest incidence of acute hepatitis B and 2nd highest incidence of acute hepatitis C. In 2012, 8 cases of hepatitis A, 142 cases of acute hepatitis B, and 56 cases of hepatitis C were reported to the Bureau for Public Health." Dr. Swinker continued, "National Hepatitis Awareness Month should be used by health care practitioners, STD clinics, behavioral health, and substance abuse treatment centers statewide to discuss the importance of appropriate vaccination for hepatitis A and hepatitis B. For example, everyone should be vaccinated against hepatitis B, and all infants and young children in day care or pre-kindergarten settings and certain higher risk adults need hepatitis A vaccination in accordance with the Advisory Council on Immunization Practices (ACIP). While there is no vaccine to prevent hepatitis C, medical care for managing the infection is available." Dr. Swinker says viral hepatitis is the leading cause of liver cancer with nearly 4 million Americans having chronic hepatitis, without even knowing it.



Hepatitis A Virus (HAV) is spread by eating food or drinking water contaminated with fecal matter. Hepatitis B Virus (HBV) is spread through contact with infected blood or body fluids, most commonly spread from an infected mother to baby at birth, followed by unknown route. It is also spread through unprotected sexual activity and through recreational use of injecting drugs. HBV infections usually last for 6 months but in certain cases a person can remain infectious for life. Occupational spread of HBV in medical settings has been virtually eliminated by vaccination of health care workers and use of universal precautions. Practicing safer sex and not sharing needles or drug injection equipment can protect you against HBV infection. Hepatitis C Virus (HCV) is spread through contact with infected blood. A person could be at risk for HCV if they have received a blood transfusion before July 1992, if they have ever injected or snorted drugs, or shared needles or ink wells for body piercing or tattoos.

Dr. Swinker says, "It's important to remember that when vaccine is readily available, one preventable case of the disease is too many. If you become infected with hepatitis, it's important to consult your health care provider." Awareness is the first step in protecting yourself against hepatitis. If you are at risk or need further information, contact your physician, local health department or the WV Office of Epidemiology and Prevention Services at (304) 558-5358 or online at www.dide.wv.gov.

2012 Vaccine-Preventable Disease Surveillance Indicator End-of-Year Progress Report

The Centers for Disease Control and Prevention (CDC)-funded Immunization and Vaccines for Children Grant provides goals for vaccine-preventable disease (VPD) surveillance for the state of West Virginia. CDC requests a mid-year and end -of-year report on our progress on the surveillance Objectives and Performance Measures listed in Appendix A (page 6). Two of the three Performance Measures address the timeliness of submission and data completeness, based on surveillance indicators.

The purpose of vaccine-preventable disease surveillance indicators in the United States is to ensure adequate performance of the essential components of surveillance and case investigation, and to identify components of each that need improvement, which is why it is so important to complete as much information as possible when investigating VPDs. This document contains the results of the 2012 end-of-year progress report.

From January 1 through December 31, 2012, we have not done as well as in our reporting efforts as we did during 2011. We have met 10 out of 16 individual surveillance indicator targets (see Appendix A, page 6), as opposed to 14 out of 16 during 2011. Targets we have missed during 2012 include:

2012 Objective	2012 Target	2012 Data	n
Meningococcal cases disease with complete vaccination history	90%	**75%**	3/4
Meningococcal disease cases with known serogroup	90%	**75%**	3/4
Mumps cases with appropriate clinical specimens	80%	**0%**	0/2
Mumps cases with complete vaccination history	90%	**50%**	1/2
Pertussis cases with laboratory confirmation	70%	**68%**	50/74
Invasive pneumococcal disease cases among children under 5 years of age with complete vaccination history	90%	**69%**	11/16

CDC also requests that **70%** of certain VPD cases be submitted with complete surveillance indicator information within one month of diagnosis. This target has been lowered in 2012 from 90% during previous years due to anticipated issues with the new West Virginia Electronic Disease Surveillance System (WVEDSS). Even so, we did not meet this goal in 2012.

- 32/99 (**32%**) of VPDs monitored by CDC for the Immunization grant had complete surveillance indicator information.
- 17/99 (**17%**) were submitted to CDC within one month of diagnosis.
- 6/99 (**6.1%**) were submitted with complete information within one month of diagnosis.

Regional data for all reported VPDs is displayed in Appendix B (pages 7-10). Missing surveillance indicator information for individual disease categories at the state level is outlined in Appendix C (pages 11-13). While the transition to the WVEDSS is largely responsible for the delay in reporting to CDC, it should not have such a large impact on our ability to submit complete information about VPDs to the CDC.

While no single surveillance indicator stands out as the cause of incomplete data, West Virginia has a relatively low incidence rate of VPDs and small numbers of missing surveillance indicators add up over time and lower our data completion rate. Please see below for some tips on increasing our surveillance indicator completion rate in the future.

Tips for Improving Data Completeness

Race and Ethnicity

- Asking cases (or their parent/guardian) to identify race and ethnicity during the interview process. Most people will not be offended by these questions. However, if someone asks why you need that information, explain that CDC uses it to identify groups who are at higher risk for disease so appropriate prevention efforts can be made. It is

*(See **Surveillance**, page 5)*

(***Surveillance***, *continued from page 4)*

better to ask and have a case refuse to answer than leave it blank because you did not want to offend someone. If you are concerned that asking for this information may jeopardize your ability to complete your interview, ask these questions last.

- Some people may not know what you're talking about if you ask them what their "ethnicity" is. You can simplify this question by asking whether or not they are Hispanic. There are many more ethnicities than simply "Hispanic or Latino" or not, but CDC is interested in this distinction since Hispanic and non-Hispanic Caucasians have different risks for different conditions.

Outbreak Information

- If there is no identified outbreak occurring in your county/region at the time, do not mark "Unknown" to reflect the fact that an outbreak may exist. If an outbreak situation evolves, it is very easy to go back in and change a "NO" response to a "YES".

Epi-linked Cases

- If a case (or their parent/guardian) cannot identify another epi-linked case, do not mark "Unknown" to reflect the fact that one must exist somewhere. With the exception of tetanus and influenza, VPDs are human diseases and are contracted from another person in some manner. This question refers to known individuals from whom the case may have contracted their disease.

Vaccine History

- Most incomplete vaccine information is due to missing date of vaccination information. Please complete vaccine history information in the appropriate Event tab first, and then associate vaccination information with the specific disease information from the Investigation tab.
- Use available resources to obtain vaccination records for cases. If the information is not available in WVSIIS, these records may be obtained from a case's physician and/or school records. The state VPD epidemiologist is happy to assist in the effort to find vaccination records for VPD cases and can be reached at 304-558-5358.

A list of surveillance indicators for selected VPDs likely to be seen in West Virginia can be found on the Division of Infectious Disease Epidemiology's Vaccine-Preventable Disease webpage at: http://www.dhhr.wv.gov/oeps/disease/IBD_VPD/VPD/Documents/Surveillance%20Indicators%20for%20Selected%20Vaccine-Preventable%20Diseases.pdf and in the CDC's "Manual for the Surveillance of Vaccine-Preventable Diseases" at: http://www.cdc.gov/vaccines/pubs/surv-manual/index.html.

Tuberculosis rates in WV lowest in the nation

The statistical assessment of 2012 state-by-state tuberculosis incidence has been released by the CDC. The statistical review found West Virginia to be the lowest incidence rate of all of the 50 states (0.43 cases per 100,000). This is a welcome finding since it reflects on our primary mission and designation as the Division of Tuberculosis Elimination. We are currently reviewing the reasons for this low rate. Our study indicates that the favorable tuberculosis rate is related to the reduced immigrant and susceptible ethnic populations. Tuberculosis incidence is also favorably associated with our rural geography and lower HIV incidence.

In order to capitalize and further improve upon our favorable positions, there are three important epidemiological approaches in which we must persevere:

1: It is important to vigorously pursue contact investigation of all active cases to prevent secondary disease.

2: We must carefully and comprehensively assess certain groups which are high risk for the development of tuberculosis. These include those with HIV, diabetes mellitus, and patients that are increasingly considered for tumor necrosis factor treatments.

3: Since 60% of the United States' tuberculosis rate is among the foreign-born, our colleges and workplaces should evaluate all foreign-born entrants to West Virginia for active or latent tuberculosis and treat to completion those found to have active TB or LTBI.

Tuberculosis elimination has been a public health priority for 25 years but has been a moving target. Hopefully, West Virginia will be an early obtainer of this elusive goal.

2012 Vaccine-Preventable Disease Surveillance: Appendix A (meeting surveillance indicator targets)

Performance Measure Target	2012 Objective
70%	Percent of case reports with complete information submitted to CDC within one month of diagnosis for the following: Congenital Rubella Syndrome (CRS), diphtheria, haemophilus influenzae, measles, meningococcal disease, mumps, pertussis, polio, invasive pneumococcal disease, rubella, tetanus, pediatric (<18 years of age) influenza deaths, and varicella.
70%	Percent of case reports with complete information submitted electronically to CDC within one month of diagnosis for the following: Congenital Rubella Syndrome (CRS), diphtheria, haemophilus influenzae, measles, meningococcal disease, mumps, pertussis, polio, invasive pneumococcal disease, rubella, tetanus, pediatric (<18 years of age) influenza deaths, and varicella.
90%	The proportion of haemophilus influenzae invasive disease cases among children under 5 years of age with complete vaccination history.
90%	The proportion of haemophilus influenzae isolates from cases under 5 years of age that were serotyped.
100%	The proportion of measles cases with complete vaccination history.
100%	The proportion of measles cases or chains of transmission that have an imported source.
90%	The proportion of meningococcal cases with complete vaccination history.
90%	The proportion of meningococcal cases with known serogroup.
80%	The proportion of mumps cases for which appropriate clinical specimens were obtained and submitted to the laboratory.
90%	The proportion of mumps cases with complete vaccination history.
60%	The proportion of pertussis cases from which clinical specimens are obtained.
70%	The proportion of probable and confirmed pertussis cases meeting the clinical case definition that is laboratory confirmed.
2%	The proportion of cases confirmed by isolation of B. pertussis by culture.
50%	The proportion of probable and confirmed pertussis cases with a complete vaccination history.
90%	The proportion of pneumococcal invasive disease cases among children under 5 years of age with complete vaccination history.
80%	The proportion of pneumococcal isolates from cases of invasive disease under 5 years of age that are serotyped and tested for antibiotic resistance.
100%	The proportion of confirmed rubella cases among women of child-bearing age with known pregnancy status.
100%	The proportion of confirmed rubella cases that are laboratory confirmed.
N/A	Percentage of varicella cases with complete information for age, vaccination history, and severity of disease.

2012 Vaccine-Preventable Disease Surveillance: Appendix B (regional data for vaccine-preventable disease)

Region 1

(Fayette, Greenbrier, Monroe, Summers, Mercer, Raleigh, Wyoming and McDowell)

Surveillance Indicator	Percent of cases with complete information entered in WVEDSS (n)
Demographics (name, address, date of birth, gender and ethnicity)	72% (21/29)
Date of symptom onset	100% (29/29)
Date of report to Public Health	100% (29/29)
Vaccine history (including dates of administration)	55% (16/29)
Symptoms/Complications (including hospitalization, type of infections and underlying medical conditions)	79% (23/29)
Lab testing/information (including all additional necessary lab-related information such as serotyping and sensitivity results)	93% (27/29)
Epidemiologic data (including involvement in an outbreak, epi-links to other cases, contact tracing information, transmission setting)	96% (22/23)
Complete data (all surveillance indicator information entered in WVEDSS)	**34% (10/29)**
Time from diagnosis to submission to CDC (in days) Mean: 54.6 Median: 54.8 Range: 19-92	

Region 2

(Jackson, Mason, Putnam, Cabell, Lincoln, Wayne, Mingo, Logan and Boone Counties)

Surveillance Indicator	Percent of cases with complete information entered in WVEDSS (n)
Demographics (name, address, date of birth, gender and ethnicity)	71% (12/17)
Date of symptom onset	100% (17/17)
Date of report to Public Health	100% (17/17)
Vaccine history (including dates of administration)	59% (10/17)
Symptoms/Complications (including hospitalization, type of infections and underlying medical conditions)	88% (15/17)
Lab testing/information (including all additional necessary lab-related information such as serotyping and sensitivity results)	94% (16/17)
Epidemiologic data (including involvement in an outbreak, epi-links to other cases, contact tracing information)	70% (7/10)
Complete data (all surveillance indicator information entered in WVEDSS)	**24% (4/17)**
Time from diagnosis to submission to CDC (in days) Mean: 86.8 Median: 81 Range: 16-185	

2012 Vaccine-Preventable Disease Surveillance: Appendix B (regional data for vaccine-preventable disease)

Region 3

(Jefferson, Berkeley, Morgan, Hampshire, Mineral, Grant, Hardy, Pendleton and Pocahontas Counties)

Surveillance Indicator	Percent of cases with complete information entered in WVEDSS (n)
Demographics (name, address, date of birth, gender and ethnicity)	84% (16/19)
Date of symptom onset	100% (19/19)
Date of report to Public Health	95% (18/19)
Vaccine history (including dates of administration)	84% (16/19)
Symptoms/Complications (including hospitalization, type of infections and underlying medical conditions)	74% (14/19)
Lab testing/information (including all additional necessary lab-related information such as serotyping and sensitivity results)	95% (18/19)
Epidemiologic data (including involvement in an outbreak, epi-links to other cases, contact tracing information)	53% (8/15)
Complete data (all surveillance indicator information entered in WVEDSS)	**21% (4/19)**
Time from diagnosis to submission to CDC (in days) Mean: 89.1 Median: 45.8 Range: 13-224	

Region 4

(Hancock, Brooke, Ohio, Marshall, Wetzel and Tyler Counties)

Surveillance Indicator	Percent of cases with complete information entered in WVEDSS (n)
Demographics (name, address, date of birth, gender and ethnicity)	80% (8/10)
Date of symptom onset	100% (10/10)
Date of report to Public Health	100% (10/10)
Vaccine history (including dates of administration)	90% (9/10)
Symptoms/Complications (including hospitalization, type of infections and underlying medical conditions)	100% (10/10)
Lab testing/information (including all additional necessary lab-related information such as serotyping and sensitivity results)	100% (10/10)
Epidemiologic data (including involvement in an outbreak, epi-links to other cases, contact tracing information)	90% (9/10)
Complete data (all surveillance indicator information entered in WVEDSS)	**60% (6/10)**
Time from diagnosis to submission to CDC (in days) Mean: 47.2 Median: 38.8 Range: 31-105	

2012 Vaccine-Preventable Disease Surveillance: Appendix B (regional data for vaccine-preventable disease)

Region 5

(Monongalia, Preston, Marion, Taylor, Harrison and Doddridge Counties)

Surveillance Indicator	Percent of cases with complete information entered in WVEDSS (n)
Demographics (name, address, date of birth, gender and ethnicity)	90% (9/10)
Date of symptom onset	90% (9/10)
Date of report to Public Health	90% (9/10)
Vaccine history (including dates of administration)	50% (5/10)
Symptoms/Complications (including hospitalization, type of infections and underlying medical conditions)	90% (9/10)
Lab testing/information (including all additional necessary lab-related information such as serotyping and sensitivity results)	100% (10/10)
Epidemiologic data (including involvement in an outbreak, epi-links to other cases, contact tracing information)	56% (5/9)
Complete data (all surveillance indicator information entered in WVEDSS)	**40% (4/10)**
Time from diagnosis to submission to CDC (in days) Mean: 71.9 Median: 60.3 Range: 17-189	

Region 6

(Pleasants, Wood, Ritchie, Wirt, Calhoun and Roane Counties)

Surveillance Indicator	Percent of cases with complete information entered in WVEDSS (n)
Demographics (name, address, date of birth, gender and ethnicity)	25% (1/4)
Date of symptom onset	100% (4/4)
Date of report to Public Health	75% (3/4)
Vaccine history (including dates of administration)	75% (3/4)
Symptoms/Complications (including hospitalization, type of infections and underlying medical conditions)	100% (4/4)
Lab testing/information (including all additional necessary lab-related information such as serotyping and sensitivity results)	100% (4/4)
Epidemiologic data (including involvement in an outbreak, epi-links to other cases, contact tracing information)	100% (3/3)
Complete data (all surveillance indicator information entered in WVEDSS)	**25% (1/4)**
Time from diagnosis to submission to CDC (in days) Mean: 71.6 Median: 80.4 Range: 13-113	

2012 Vaccine-Preventable Disease Surveillance: Appendix B (regional data for vaccine-preventable disease)

Region 7

(Tucker, Barbour, Randolph, Upshur, Lewis, Gilmer, Braxton, Webster, Nicholas and Clay Counties)

Surveillance Indicator	Percent of cases with complete information entered in WVEDSS (n)
Demographics (name, address, date of birth, gender and ethnicity)	40% (2/5)
Date of symptom onset	100% (5/5)
Date of report to Public Health	80% (4/5)
Vaccine history (including dates of administration)	40% (2/5)
Symptoms/Complications (including hospitalization, type of infections and underlying medical conditions)	100% (5/5)
Lab testing/information (including all additional necessary lab-related information such as serotyping and sensitivity results)	100% (5/5)
Epidemiologic data (including involvement in an outbreak, epi-links to other cases, contact tracing information)	67% (2/3)
Complete data (all surveillance indicator information entered in WVEDSS)	**40% (2/5)**
Time from diagnosis to submission to CDC (in days) Mean: 31.7 Median: 26 Range: 15-53	

Region 8

(Kanawha County)

Surveillance Indicator	Percent of cases with complete information entered in WVEDSS (n)
Demographics (name, address, date of birth, gender and ethnicity)	80% (4/5)
Date of symptom onset	80% (4/5)
Date of report to Public Health	100% (5/5)
Vaccine history (including dates of administration)	40% (2/5)
Symptoms/Complications (including hospitalization, type of infections and underlying medical conditions)	100% (5/5)
Lab testing/information (including all additional necessary lab-related information such as serotyping and sensitivity results)	100% (5/5)
Epidemiologic data (including involvement in an outbreak, epi-links to other cases, contact tracing information)	100% (3/3)
Complete data (all surveillance indicator information entered in WVEDSS)	**25% (1/4)**
Time from diagnosis to submission to CDC (in days) Mean: 36.5 Median: 40 Range: 13-224	

2012 Vaccine-Preventable Disease Surveillance: Appendix C (missing surveillance data by disease)

Surveillance Indicators for Confirmed/Probable* Mumps Cases (n=2)	**Percent complete Jan 1 – Dec 31, 2012**	**Missing data**
Demographics (Name, address, gender, race, ethnicity, date of birth)	50% (1/2)	No race/ethnicity
Clinical Case Definition	100%	
Date of Symptom Onset	100%	
Date of Report to Public Health	50% (1/2)	1 left blank
Vaccination History	50% (1/2)	No vaccine info entered for 1
Hospitalization	100%	
Laboratory Testing	100%	
Transmission Setting	0	This is a WVEDSS error that is being addressed
Epidemiologic Data – Outbreak Related	100%	
Epidemiologic Data – Epi-linked to Another Case	0	This is a WVEDSS error that is being addressed
Epidemiologic Data – Contact Tracing Complete	0	This is a WVEDSS error that is being addressed

*Suspected cases should also include all above listed information.

Surveillance Indicators for Confirmed/Probable H. flu Cases (n=3 in children < 5 years of age*)	**Percent complete Jan 1 – Dec 31, 2012**	**Missing data**
Demographics (Name, address, gender, race, ethnicity, date of birth)	33%	2 missing race/ethnicity
Clinical Case Definition	100%	
Date of Symptom Onset	100%	
Date of Report to Public Health	100%	
Vaccination History	100%	
Serotype	100%	
Specimen Source	100%	
Type of Infection	100%	

*Even though CDC only monitors completeness of data for children < 5 years of age, this information should be complete for all cases, regardless of age.

2012 Vaccine-Preventable Disease Surveillance: Appendix C (missing surveillance data by disease)

Surveillance Indicators for Confirmed/Probable Meningococcal Cases (n=4)	**Percent complete Jan 1 – Dec 31, 2012**	**Missing data**
Demographics (Name, address, gender, race, ethnicity, date of birth)	100%	
Clinical Case Definition	100%	
Date of Symptom Onset	100%	
Date of Report to Public Health	100%	
Vaccination History	75%	Vaccine history missing for 1 adult
Serogroup	75%	1 unable to test for serogroup
Type of Infection	100%	

Surveillance Indicators for Confirmed Invasive *S. pneumonia* Cases (n=16 in children < 5 years of age*)	**Percent complete Jan 1 – Dec 31, 2012**	**Missing data**
Demographics (Name, address, gender, race, ethnicity, date of birth)	69%	5 missing race/ethnicity
Clinical Case Definition	100%	
Date of Symptom Onset	100%	
Date of Report to Public Health	94%	1 left blank
Vaccination History	69%	4 missing dates of vaccination, 1 unknown
Type of Infection	100%	
Specimen Source	100%	
Underlying Medical Conditions	94%	1 unknown
Antibiotic Sensitivity Profile	94%	1 not done
Capsular Type	88%	1 isolate not sent to OLS, 1 unable to type

*Even though CDC only monitors completeness of data for children < 5 years of age, this information should be complete for all cases, regardless of age.

2012 Vaccine-Preventable Disease Surveillance: Appendix C (missing surveillance data by disease)

Surveillance Indicators for Confirmed/Probable Pertussis Cases (n=74)	**Percent complete Jan 1 – Dec 31, 2012**	**Missing data**
Demographics (Name, address, gender, race, ethnicity, date of birth)	76%	• 17 missing ethnicity • 15 missing race • 7 missing street address • 1 missing city address
Clinical Case Definition	100%	
Date of Symptom Onset	97%	2 left blank
Date of Report to Public Health	97%	2 left blank
Vaccination History	61%	20 children with no vaccination dates 9 adults with no vaccine information
Complications (including information on hospitalization, presence of whoop, post-tussive vomiting, and paroxysmal cough, apnea, chest x-rays for pneumonia, seizures and encephalopathy)	82%	• 3 missing whoop • 3 missing post-tussive vomiting • 2 missing paroxysmal cough • 5 missing apnea • 8 missing chest x-ray for pneumonia data
Antibiotic Treatment	100%	
Laboratory Testing	100%	
Epidemiologic Data – Outbreak Related	89%	6 unknown, 2 left blank
Epidemiologic Data – Epi-linked to Another Case	89%	8 unknown
Epidemiologic Data – Contact Tracing Complete	92%	6 had no evidence of contact tracing in contact tracing section or notes, or response to questions about number recommended PEP

*The **West Virginia EPI-LOG** is published quarterly by the West Virginia Department of Health and Human Resources, Bureau for Public Health, Office of Epidemiology & Prevention Services. Graphic layout by Chuck Anziulewicz. Please call the Office of Epidemiology & Prevention Services at (304) 558-5358 if you need additional information regarding any article or information in this issue. If you have ideas or contributions you would like to make in a future issue, contact editor Loretta Haddy.*