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Negative Rapid Influenza Diagnostic Tests Don't Rule Out Influenza in Long Term Care Facility Outbreak Feb. 1–9, 2011

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Background

On Feb. 9, 2011, the Pulaski County Health Department (PCHD) notified the Indiana State Department of Health (ISDH) of a possible influenza outbreak at a long term care (LTC) facility with 28 residents. One resident was hospitalized with laboratory confirmed influenza A. Two additional residents and two staff members were identified with influenza-like illness (ILI). Predominant symptoms included cough, congestion, low grade fever, and malaise.

Epidemiologic Investigation

The PCHD along with the ISDH initiated a collaborative investigation of the outbreak. Illness onset dates ranged from Feb. 1– 9, 2011. The hospitalized case had been transferred from another LTC facility five days prior to illness onset. This facility was notified of the influenza A diagnosis of the previous resident. Symptomatic residents and staff were isolated for seven days after onset of illness or until 24 hours after resolution of fever and respiratory symptoms, whichever was longer. The LTC protocol also mandated that symptomatic staff be cleared by health care provider before returning to work. ILI was reported among family members of ill residents and staff. Symptomatic residents had received the 2010-2011 seasonal influenza vaccine. Immunization status on staff was not available. Outbreak control measures included re-offering influenza vaccine to unvaccinated residents and staff and treating ill residents and staff with antiviral medications regardless of the rapid influenza diagnostic test results. Four individuals (two residents and two staff) had negative rapid influenza diagnostic tests (RIDTs). Three individuals (two residents and one staff) with negative RIDTs submitted nasopharyngeal specimens for viral culture to the ISDH Laboratory.

Environmental Assessment
No change was made in the daily environmental infection control measures because standard cleaning and disinfection procedures (e.g., using cleaners and water to pre-clean surfaces prior to applying disinfectants to frequently touched surfaces or objects for indicated contact times) are adequate for influenza virus environmental control in all settings within a healthcare facility. All residents were restricted to rooms for meals. Signage was posted on entry doors to alert the community of the respiratory outbreak and to restrict visitors. The staff utilized respiratory droplet precautions when caring for symptomatic residents. Respiratory hygiene and hand etiquette were implemented among residents and staff.

Laboratory Results
One resident tested positive for influenza A by RIDT while hospitalized. No further testing was performed. Of the three individuals (two residents and one staff) who had negative RIDTs at the facility and submitted specimens for viral culture, one resident and one staff tested positive for influenza A (H3).

Conclusions
The investigation confirms that an outbreak of influenza A (H3) had occurred among the residents and staff at the long term care facility. Five individuals (three residents and two staff members) developed ILI with symptoms of cough, congestion, low grade fever, and malaise. Illness onset dates ranged from Feb. 1– 9, 2011. One resident and one staff member were confirmed positive with influenza A (H3). In addition, one resident was hospitalized with influenza A by RIDT and one resident and one staff member had ILI.

All rapid influenza diagnostic tests *at the facility* were negative. However, according to the Centers for Disease Control and Prevention (CDC), false-negative results with rapid influenza tests are more likely to occur when disease prevalence is high, typically at the peak of the influenza season (January-February). Therefore, negative rapid test results do not necessarily rule out influenza in patients with signs and symptoms of influenza, especially if disease activity is high. The resident who tested positive for influenza A (H3) was treated with antiviral medications, but only after the results returned positive. The hospitalized resident and the resident who tested negative by rapid test and culture were not treated. The CDC recommends that antiviral treatment should be started as soon as possible for all persons with suspected or confirmed influenza, as this treatment is a key component of influenza outbreak control in institutions that house patients at higher risk for influenza complications. ILI was reported among the family members of ill residents and staff. The route of transmission for this outbreak was most likely person-to-person via the residents, staff, and family members. No deaths occurred during this outbreak.

Influenza is a contagious illness transmitted by respiratory droplets through the nasal/oral route. It is easily spread from person to person and by contact with contaminated objects. Symptoms include fever, chills, headache, cough, sore throat, and muscle aches. Symptoms usually start one to fourdays following exposure and last two to seven days.

Recommendations
The best protection against influenza is an influenza vaccination every year. Beginning with the 2010-2011 influenza season, the CDC and the Advisory Committee of Immunization Practices (ACIP) expanded the recommendation for annual influenza vaccination to include all people aged 6 months and older. Certain people are at greater risk for developing influenza complications:

- children aged <2 years;
- adults aged ≥65 years;
- persons with chronic pulmonary (including asthma), cardiovascular (except hypertension alone), renal, hepatic, hematological (including sickle cell disease), metabolic disorders (including diabetes mellitus) or neurologic and neurodevelopment conditions (including disorders of the brain, spinal cord, peripheral nerve, and muscle such as cerebral palsy, epilepsy [seizure disorders], stroke, intellectual disability [mental retardation], moderate to severe developmental delay, muscular dystrophy, or spinal cord injury);
- persons with immunosuppression, including that caused by medications or by HIV infection;
- women who are pregnant or postpartum (within two weeks after delivery);
- persons aged <19 years who are receiving long-term aspirin therapy;
- American Indians/Alaska Natives;
- persons who are morbidly obese (i.e., BMI ≥40); and
- residents of long term care and other chronic-care facilities.
- people who live with or care for those at high risk for complications from influenza, including:
    - Household contacts of persons at high risk for complications from influenza (see above)
    - Household contacts and out-of-home caregivers of children less than 6 months of age (children younger than 6 months are too young to be vaccinated)
    - Health care workers

The CDC and the ACIP recommend that all health care workers get an annual flu vaccine:

- As a health care worker, by getting vaccinated, you can help protect your family at home as well as your patients at work from getting sick.
- Influenza outbreaks in hospitals and long-term care facilities have been attributed to low vaccination rates among health care professionals.
- Studies have shown that higher vaccination rates among health care workers can reduce influenza-like illness, and even deaths, in settings like long term care facilities.

Good respiratory hygiene is important to prevent the spread of ALL respiratory infections, including influenza.

- Use your elbow or upper arm (instead of your hands) or a tissue to cover your mouth and nose when you cough or sneeze. Immediately dispose of used tissue.
- To clean your hands after coughing or sneezing, wash with soap and water, or clean with alcohol-based hand cleaner if water is not available.
- Avoid close contact with people who are sick.
- If you get influenza, stay home from work, school, and social gatherings. This will help prevent others from catching your illness and gives your body the rest it needs to recover.
- Try not to touch your eyes, nose, or mouth. Many diseases often spread this way.

Resources:

Centers for Disease Control and Prevention (2010). *Infection Control Measures for Preventing and Controlling Influenza Transmission in Health-Care Facilities.* Retrieved on Feb. 9, 2011 from http://www.cdc.gov/flu/professionals/infectioncontrol/longtermcare.htm

Centers for Disease Control and Prevention (2011). *Seasonal Influenza (Flu) - Using Antiviral Medications to Control Influenza Outbreaks in Institutions.* Retrieved on Feb. 9, 2011 from http://www.cdc.gov/flu/professionals/infectioncontrol/institutions.htm

Indiana State Department of Health (2011). *Influenza Fact Sheet*. Retrieved on April 4, 2011 from http://www.in.gov/isdh/files/2010FluQF.pdf

Cancer Survivorship: Data from the 2010 Indiana Behavioral Risk Factor Surveillance System

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Cancer is the second leading cause of death of Indiana residents and nationally affects an estimated onein-three individuals sometime in life, either through personal diagnosis or that of a loved one. As a result of advances in early detection and treatment, cancer has become a curable disease for some and a chronic illness for others (CDC). According to the American Cancer Society, approximately 62 percent of cancer survivors are expected to live at least five years after diagnosis.

As defined in the Indiana Cancer Control Plan 2010-2014, the goal of the quality of life focus area is to improve the quality of life for cancer patients, survivors, and their families. Two objectives support this goal: increase access to resources for cancer survivors and increase cancer survivors' utilization of end of life care. The Indiana Cancer Consortium (ICC) Quality of Life Committee is implementing the recommended strategies outlined in the cancer control plan to meet these objectives by 2014. In August, 2010, the Quality of Life committee developed a web resource guide. The committee is currently updating the resource guide by researching new resources and developing ideas to make the resources more accessible to potential users. In September, 2011, the ICC provided funding to four organizations to conduct quality of life educational seminars throughout the state. The purpose of these seminars is to provide Indiana health care professionals with quality of life information to enhance care for cancer patients and survivors.

The Indiana State Department of Health partnered with the American Cancer Society to include the Cancer Survivorship module and two state-added questions regarding access to/need for services pertaining to cancer care in the 2010 Indiana Behavioral Risk Factor Surveillance System (BRFSS) survey. The information obtained from these questions provided information on some of the treatment and quality of life indicators for cancer survivors. Many health conditions and behaviors are not reportable; hence, prevalence

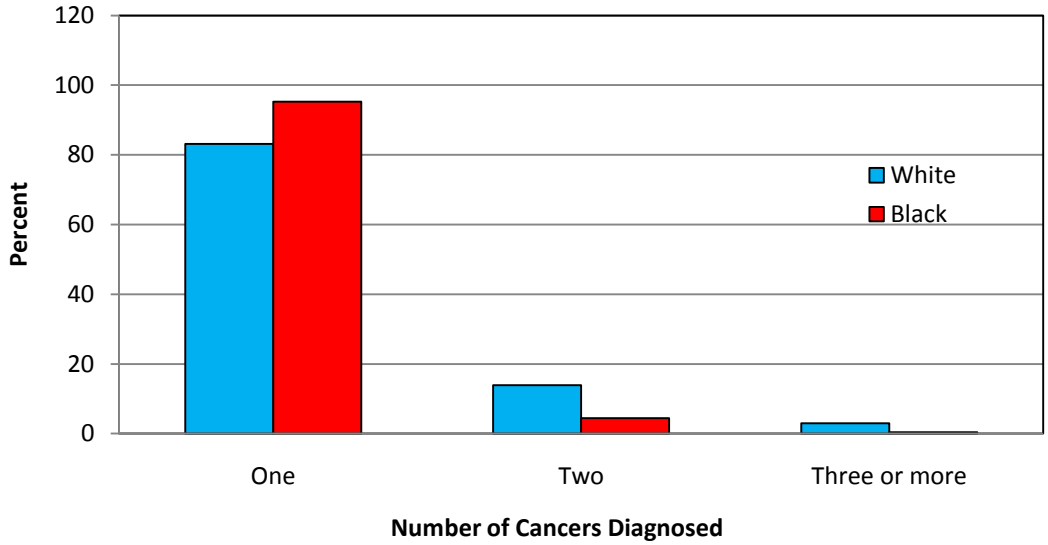
data must be obtained from another source. The BRFSS survey is an annual random digit-dial telephone survey of adults aged 18 years and older and is conducted through a cooperative agreement with the Centers for Disease Control and Prevention. All states and the District of Columbia participate.

The BRFSS relies on self-reported data. This type of survey has certain limitations that should be understood when interpreting the data. Many times, respondents have the tendency to underreport behaviors that may be considered socially unacceptable (*e.g.*, smoking, driving after drinking alcohol). Conversely, respondents may overreport behaviors that are desirable (*e.g.*, physical activity, fruit and vegetable consumption). Information on the topic of cancer survivorship of Indiana adults was obtained from the 2010 BRFSS survey. First, respondents were asked if they had ever been told they had cancer. Those who had cancer and had also completed treatment for cancer were asked additional questions to gather information on such items as the number of different types of cancer, type of physician providing majority of their health care, and pain management. In describing racial differences in this article, "white" refers to white, non-Hispanic respondents, and "black" refers to black, non-Hispanic respondents The differences reported below are statistically significant ($p<0.05$) unless otherwise noted.

Types of Cancer

Overall, 9.3% of adults reported they had been told by a doctor, nurse or other health professional that they had cancer (approximately 415,000 adults). The prevalence of cancer increased from 0.2% for adults ages 18 to 24 years to 25.4% for adults ages 65 years and older. Females were more likely than males to report they had cancer (10.7% vs. 7.8%, respectively). Overall, 83.8% of adults with cancer reported being diagnosed with one type of cancer, 13.3% reported two types, and 2.9% reported being diagnosed with three or more different types of cancer. White adults were more likely than black adults to have been diagnosed with two or more types of cancer (Figure 1). The most common cancers reported were skin cancer (excluding melanoma), breast, cervical, and prostate.

Figure 1: Number of Different Types of Cancer Diagnosed by Race
Indiana 2010



Source: Indiana 2010 BRFSS

Currently Receiving Treatment
Overall, 10.9% of respondents reported they were currently receiving treatment (surgery, radiation therapy, or chemotherapy) for their cancer. For respondents who were not currently receiving treatment, approximately one-third (33.1%) had been given a written summary of all the cancer treatments they received. Almost 75 percent (72.7%) received instructions from a doctor, nurse or other health professional about where they should return or who they should see for routine cancer check-ups after completing their treatment for cancer; 73.3% of those respondents reported these instructions had been written down or printed for them.

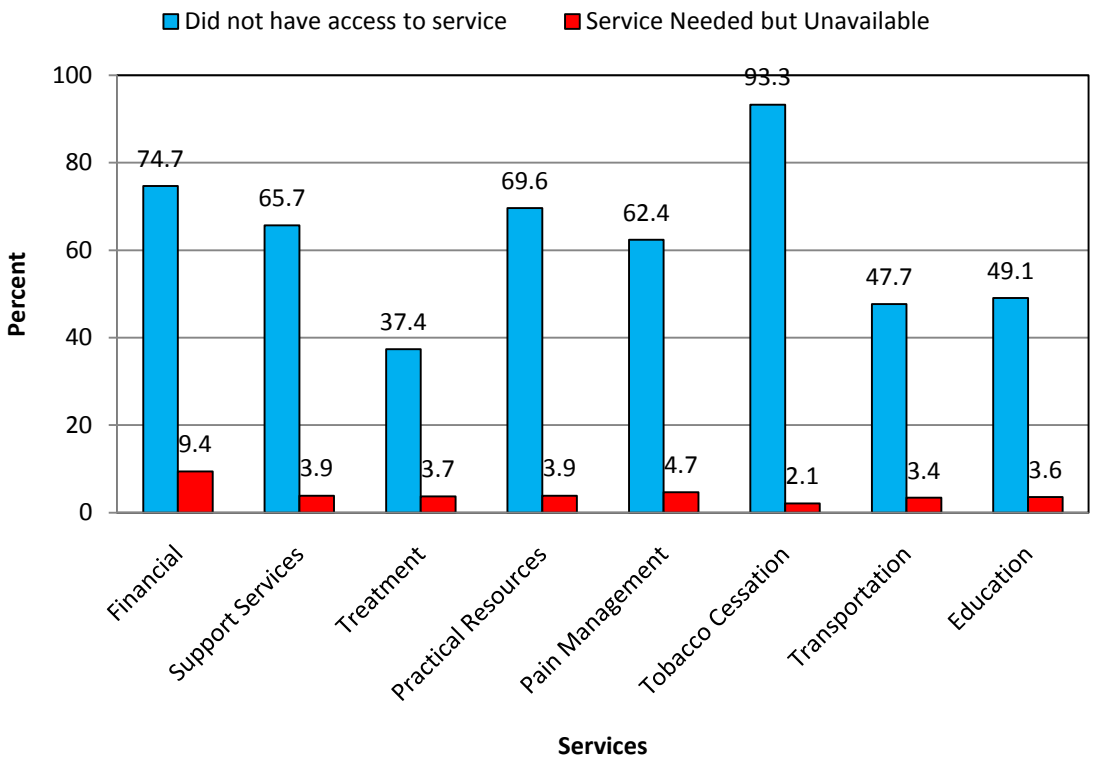
Insurance Coverage
Most respondents who reported they had had cancer and were not currently receiving treatment (95.2%) reported having health insurance that paid for all or part of their cancer treatment. There were no differences among sex, age or education levels, though respondents with household income of $75,000 or greater were more likely than those with household income less than $35,000 to report having insurance that paid for all or part of their treatment. Approximately 28,000 (7.8%) respondents reported they had ever been denied health insurance because of their cancer.

Clinical Trials
The ICC encourages participation in clinical trials, which are medical research studies conducted with patient volunteers to answer scientific questions and find better ways to detect, prevent, or treat cancer or its side effects. Overall, 4.1% of respondents who had had cancer and not currently receiving treatment reported that they were participants in a clinical trial as part of their cancer treatment. According to the American Cancer Society, about 5 percent of adult patients participate in cancer clinical trials nationally.

Palliation (Pain Management)
Palliation is the relief of symptoms and suffering caused by disease or illness which helps patients feel more comfortable and improves quality of life.
Respondents who were not currently receiving cancer treatment were asked if they currently had physical pain caused by their cancer or cancer treatment; 10.5% responded "yes." Respondents ages 65 years and older were less likely than those ages 45-54 and 55-64 to report pain (4.5% vs. 18.1% and 12.8%, respectively). Among respondents having physical pain, 18.3% reported their pain was not under control.

Resources Available/Needed
Respondents who had ever been told by a health professional that they had cancer were also asked about access they had to resources, as well as those needed but unavailable. Support services included patient navigation (individualized assistance offered to patients, families, and caregivers to help overcome health care system barriers and facilitate timely access to quality medical and psychosocial care), support groups, help lines, and counseling. Practical resources included medical equipment, medical supplies, nutritional supplements, social worker and spiritual support. Tobacco cessation, financial and practical resources were the leading resources to which respondents did not have access, while financial services was the leading resource needed but not available (Figure 2).

Figure 2: Adults Not Having Access to/Need For Services, Indiana 2010



Other

While those adults who ever had cancer were less likely than those without cancer to report their general health as excellent or very good, there were no differences in being very satisfied or satisfied with their life.

For additional information on cancer, please visit the ICC website at http://indianacancer.org/ and the American Cancer Society http://www.cancer.org/

Training Room

INDIANA STATE DEPARTMENT OF HEALTH IMMUNIZATION PROGRAM PRESENTS:

Immunizations from A to Z

Immunization Health Educators offer this FREE, one-day educational course that includes:

- Principles of Vaccination
- Childhood and Adolescent Vaccine-Preventable Diseases
- Adult Immunizations
    - Pandemic Influenza
- General Recommendations on Immunization
    - Timing and Spacing
    - Indiana Immunization Requirements
    - Administration Recommendations
    - Contraindications and Precautions to Vaccination
- Safe and Effective Vaccine Administration
- Vaccine Storage and Handling
- Vaccine Misconceptions
- Reliable Resources

This course is designed for all immunization providers and staff. Training manual, materials, and certificate of attendance are provided to all attendees. Please see the Training Calendar for presentations throughout Indiana. Registration is required. To attend, schedule/host a course in your area or for more information, please reference http://www.in.gov/isdh/17193.htm.

ISDH Data Reports Available

The following data reports and the *Indiana Epidemiology Newsletter* are available on the ISDH Web Page:

http://www.IN.gov/isdh/

HIV/STD Spotlight Reports (June 2007, December 2007, June 2008, January 2009)	Indiana Mortality Report (1999-2008)
Indiana Cancer Report: Incidence; Mortality; Facts & Figures	Indiana Infant Mortality Report (1999, 2002, 1990-2003)
Indiana Health Behavior Risk Factors (1999-2010)	Indiana Natality Report (1998-2008)
Indiana Health Behavior Risk Factors (BRFSS) Newsletter (2003-2011)	Indiana Induced Termination of Pregnancy Report (1998-2007)
Indiana Hospital Consumer Guide (1996)	Indiana Marriage Report (1995, 1997, & 2000-2004)
Public Hospital Discharge Data (1999-2010)	Indiana Infectious Disease Report (1997-2009)
Assessment of Statewide Health Needs – 2007	Indiana Maternal & Child Health Outcomes & Performance Measures (1989-1998, 1990-1999, 1991-2000, 1992-2001, 1993-2002, 1994-2003, 1995-2004, 1996-2005)

HIV Disease Summary

Information as of August 30, 2011 **based on 2000 population of 6,080,485**

HIV - without AIDS to date:

338	New HIV cases from September 2010 thru August 30, 2011	12-month incidence	5.56 cases/100,000
4,576	Total HIV-positive, alive and without AIDS on August 30, 2011	Point prevalence	75.26 cases/100,000

AIDS cases to date:

337	New AIDS cases from September 2010 thru August 30, 2011	12-month incidence	5.54 cases/100,000
5,542	Total AIDS cases, alive on August 30, 2011	Point prevalence	91.14 cases/100,000
11,386	Total AIDS cases, cumulative (alive and dead) on August 30, 2011		

REPORTED CASES of selected notifiable diseases

Disease	Cases Reported in July – August *MMWR* Weeks 26-34		Cases Reported in January - August *MMWR* Weeks 1-34	
	2010	2011	2010	2011
Campylobacteriosis	214	129	552	390
Chlamydia	4,159	4,359	13,003	18,300
Cryptococcus	5	6	19	26
Cryptosporidiosis	80	5	197	50
E. coli, shiga toxin-producing	36	25	60	47
Giardiasis	103	40	265	189
Gonorrhea	1,151	1,098	3,674	4,350
Haemophilus influenzae, invasive	13	12	65	75
Hemolytic Uremic Syndrome (HUS)	4	9	5	10
Hepatitis A	2	2	11	13
Hepatitis B	14	13	50	41
Hepatitis C Acute	5	6	22	48
Histoplasmosis	20	21	73	77
Influenza Deaths (all ages)	1	0	3	24
Legionellosis	16	14	39	32
Listeriosis	2	3	9	4
Lyme Disease	21	22	60	44
Measles	0	3	0	14
Meningococcal, invasive	5	2	18	12
Mumps	0	0	3	0
Pertussis	147	34	422	147
Rocky Mountain Spotted Fever	1	1	1	1
Salmonellosis	271	146	522	367
Shigellosis	18	11	44	47

REPORTED CASES of selected notifiable diseases

Disease	Cases Reported in July – August *MMWR* Weeks 26-34		Cases Reported in January - August *MMWR* Weeks 1-34	
	2010	2011	2010	2011
Severe *Staphylococcous aureus* in Previously Healthy Person	5	1	17	9
Group A Streptococcus, invasive	13	22	89	143
Group B, Streptococcus, Invasive (All ages)	68	64	216	219
Streptococcus pneumoniae (invasive, all ages)	49	47	481	512
Streptococcus pneumoniae (invasive, drug resistant)	19	11	153	132
Streptococcus pneumoniae (invasive, <5 years of age)	5	3	36	25
Syphilis (Primary and Secondary)	52	29	117	111
Tuberculosis	2	8	50	68
Vibriosis	1	1	5	2
Varicella (hospitalization or death)	1	1	5	2
Yersiniosis	1	4	6	10
Animal Rabies	11 (Bats)	16 (Bats)	17 (Bats)	20 (Bats)

For information on reporting of communicable diseases in Indiana, call the *Surveillance and Investigation Division* at 317.233.7125.

Indiana State Department of Health
Epidemiology Resource Center
2 North Meridian Street, 5 K
Indianapolis, IN 46204
317/233-7125

Cover photo of Cryo-EM reconstruction of a norovirus capsid.courtesy of Dr. B.V.V. Prasad, Baylor College of Medicine, Houston, TX 77030

The *Indiana Epidemiology Newsletter* is published bi-monthly by the Indiana State Department of Health to provide epidemiologic information to Indiana health care professionals, public health officials, and communities.