Alonzo L. Plough, Ph.D, MPH, Director
**Seattle-King County Department of Public Health**

# EPI-LOG

**Communicable Disease and Epidemiology News**
Published continuously since 1961
Edited by Sherry Lipsky, P.A.-C, M.P.H.

City of Seattle King County

**Seattle-King County**
**Department of Public Health**
Epidemiology
First Interstate Building
999 Third Avenue, Ste. 900
Seattle, WA 98104 - 4039

*Return Service Requested*



**IN THE JANUARY 1998 ISSUE:** **VOL 38, NO. 1**



## Flu Season Arrives

The Seattle-King County Department of Public Health (SKCDPH) Laboratory has isolated influenza A virus from 26 King County residents since mid-December, 1997. Six of these were subtyped as influenza A (H3N2), most likely Wuhan/359/95-like viruses and one as H1N1, but 14 could not be subtyped; several have been sent to the Centers for Disease Control and Prevention (CDC) for antigenic analysis. Four of the isolates that could not be subtyped were negative when tested for the avian influenza A (H5N1) virus. The CDC reports that nearly half of tested H3N2s isolated in the US since October 1997 were Sydney/5/97-like. However, the A (H3N2) reference antiserum the SKCDPH Laboratory has been provided by the CDC does not subtype Sydney-like viruses very well, which may be why our laboratory has been unable to subtype these isolates.

The extent to which Sydney/5-like viruses will circulate during the rest of the season cannot be predicted, but it is possible that it will increase, according to the CDC. "The effect of this virus' circulation on vaccine effectiveness is also unknown...but protection could be less than optimal if this variant circulates widely. However, even when vaccine and epidemic strains match closely, outbreaks can occur among vaccinated groups. When feasible, measures should be taken to reduce contact between symptomatic and asymptomatic persons during outbreaks. In addition, chemoprophylaxis of all non-ill persons with anti-viral drugs remantadine or amantadine should be considered during influenza A outbreaks in closed or semi-closed settings where persons who are at risk for influenza-related complications may be in close proximity."

While there is no evidence to suggest that cases of H5N1 avian influenza have occurred in North America, the CDC has asked that health care providers pursue laboratory confirmation of certain possible influenza cases so that identification can be made. Specimens should be collected from 1) hospitalized patients with presumed viral pneumonia, and 2) patients with influenza-like illness who have traveled to Asia during the 10 days prior to the onset of illness.

## Influenza Testing

Now that influenza season is here, health care providers may be interested in the various tests that are available for the laboratory diagnosis of influenza.

Virus culture. Virus culture is the most widely used method for detection of influenza virus in respiratory specimens. Nasopharyngeal swab, throat swab, nasal wash, or nasopharyngeal wash specimens are collected and placed in viral transport medium and kept refrigerated until transported to the laboratory. Specimens should be transported as soon as possible to ensure optimal virus culture results. Most virology laboratories culture respiratory specimens for influenza virus as well as other respiratory viruses, including respiratory syncytial virus, parainfluenza virus, and adenovirus. Virus culture has the advantage that influenza isolates are obtained for subtyping and antigenic characterization. The main disadvantage of virus culture is that it is a relatively slow method for diagnosis of influenza. Influenza virus usually takes 2 to 5 days to grow and cultures are generally observed for at least 14 days before they are considered negative.

Virus antigen. Several virus antigen detection tests are available for the rapid diagnosis of influenza including immunofluorescence, microwell enzyme immunoassay, and membrane enzyme immunoassay. Antigen detection tests can be performed on the same types of respiratory specimens described above for virus culture, but nasal wash, nasopharyngeal wash, and nasopharyngeal swab specimens have a higher yield than throat swab specimens. Immunofluorescence tests have the advantage that they can be used for detection of influenza A, influenza B, respiratory syncytial virus, parainfluenza virus, and adenovirus antigens. Enzyme immunoassays are only available for detection of influenza A and respiratory syncytial virus antigens. The Bartels Influenza A microwell enzyme immunoassay can detect influenza A antigen in respiratory specimens in about 2 hours and has a sensitivity of 96% and a specificity of more than 99% when compared to cell culture. The Directigen Flu A membrane enzyme immunoassay from Becton Dickinson can detect influenza A antigen in only 10 minutes and has a sensitivity of 91% and a specificity of 95%.

Other tests. Serologic tests are available for influenza A and B, but acute and convalescent sera are required to detect seroconversion or a fourfold or greater rise in antibody titer. A new test called ZstatFlu from ZymeTx in Oklahoma City, OK is available for rapid detection of influenza A and B neuraminidase in throat swab specimens. The ZstatFlu is a point-of-care test that must be performed immediately after collection of a specimen. ZstatFlu can detect influenza A and B neuraminidase in about 1 hour but this test does not distinguish between influenza A and influenza B and has a sensitivity of only 62% and a specificity of 99%.

The SKCDPH Laboratory mostly performs virus cultures for the diagnosis of influenza. However, the membrane enzyme immunoassay for detection of influenza A antigen is also available for situations where rapid diagnosis is needed for public health purposes such as nursing home

outbreaks. If you are a health care provider and you require rapid influenza A testing for public health reasons, please call (206) 296-4774.

## HAV in Foodhandlers

Foodborne transmission of hepatitis A virus (HAV) has long been recognized as an important source of outbreaks. Prevention and control of outbreaks has mainly consisted of post-exposure prophylaxis with immune globulin (IG). When given within two weeks of exposure, IG is greater than 85% effective in preventing HAV infection. However, this method of control does little to mitigate the potentially significant costs associated with foodborne outbreaks. Although several investigators have examined the cost of disease from HAV, few have been able to capture the total impact of a foodborne outbreak. An analysis of an outbreak in Denver, CO. estimated a cost of $809,706. The largest expense was for IG.

A review of the 26 cases of HAV infection in foodhandlers reported to SKCDPH in 1996 found that 19 (73%) of the cases resulted in recommendations for IG prophylaxis for coworkers. The recommendation for IG is usually made for all employees in the restaurant due to the fact that it is difficult to sort out which coworkers were at highest risk of exposure and which are most likely to transmit virus if they become infected. Three (11.5%) of the cases were felt to pose a significant risk of exposure for patrons and required public or semi-public announcements. At least 265 doses of IG were recommended for all 26 cases. This represents a cost of at least $3,432 for the IG alone, not including the cost of administration. Furthermore, the index employee lost an average of 3.5 working days due to HAV infection, with a range of 0-15 days.

It is clear that post-exposure prophylaxis with IG is not ideal. With the licensure of hepatitis A vaccine, pre-exposure prophylaxis is now a possibility. The vaccine is safe and highly immunogenic. However, use of prophylactic vaccine remains controversial for foodhandlers; it is primarily a cost-benefit issue. The disease is usually self-limited, complications are uncommon, and long term sequelae are rare. Thus, the vaccine's benefits are mainly in preventing disease in populations with higher risks for complications, saving time from lost work, and in avoiding the costs associated with post-exposure prophylaxis. However, the two dose vaccine schedule for adults costs an average of $46 per dose, not including administrative or office fees. The price of the vaccine, coupled with the high turnover rate of employees in the food industry, makes hepatitis A vaccine an unattractive and unworthy option for most employers.

It is possible that there are certain situations in which the vaccine would be cost effective. The CDC presented two abstracts at the 1996 Infectious Diseases Society of America meeting which provided evidence for cost savings with the use of vaccine in high rate communities and during community-wide outbreaks. Although these studies targeted children, others have suggested that similar methods may be useful for foodhandlers. Some restaurants are vaccinating employees as a means of avoiding a situation requiring a public announcement. But for most restaurants, hepatitis A vaccination programs may be difficult and costly to implement. A vaccination program in food service establishments is likely to be most cost effective when turnover rates are low and the program can be targeted toward personnel who have direct contact with the food served.

Thanks to Kalpana Gupta, M.D., Fellow, Division of Infectious Disease, University of Washington, for allowing us to excerpt from her analysis paper; based on SKCDPH surveillance data.

**To Report:**
**AIDS ..... 296-4645**
**Tuberculosis ..... 296-4747**
**STDs..... 731-3954**
**Communicable Disease 296-4774**
**24-hr Report Line..... 296-4782**
**Disease Alert:**
**CD Hotline ..... 296-4949**
**After hours ..... 682-7321**
**http://www.metrokc.gov/health/**

## REPORTED CASES OF SELECTED DISEASES SEATTLE-KING COUNTY 1997

| | CASES REPORTED IN DECEMBER | | CASES REPORTED THROUGH DECEMBER | |
|---|---|---|---|---|
| | 1997 | 1996 | 1997 | 1996 |
| VACCINE-PREVENTABLE DISEASES | | | | |
| Mumps | 0 | 0 | 4 | 6 |
| Measles | 0 | 0 | 1 | 4 |
| Pertussis | 16 | 15 | 204 | 263 |
| Rubella | 0 | 0 | 1 | 2 |
| SEXUALLY TRANSMITTED DISEASES | | | | |
| Syphilis | 6 | 0 | 11 | 1 |
| Gonorrhea | 93 | 48 | 919 | 926 |
| Chlamydial infections | 334 | 184 | 3165 | 3227 |
| Herpes, genital | 66 | 41 | 692 | 667 |
| Pelvic Inflammatory Disease | 20 | 39 | 286 | 388 |
| Syphilis, late | 12 | 2 | 51 | 60 |
| ENTERIC DISEASES | | | | |
| Giardiasis | 13 | 15 | 260 | 247 |
| Salmonellosis | 12 | 20 | 228 | 223 |
| Shigellosis | 5 | 5 | 99 | 70 |
| Campylobacteriosis | 18 | 25 | 322 | 340 |
| E.coli O157:H7 | 4 | 2 | 48 | 59 |
| HEPATITIS | | | | |
| Hepatitis A | 38 | 43 | 442 | 429 |
| Hepatitis B | 9 | 2 | 43 | 79 |
| Hepatitis C/non-A, non-B | 1 | 0 | 15 | 11 |
| AIDS | 25 | 55 | 324 | 499 |
| TUBERCULOSIS | 7 | 17 | 113 | 128 |
| MENINGITIS/INVASIVE DISEASE | | | | |
| Haemophilus influenzae | 0 | 1 | 1 | 5 |
| Meningococcal disease | 4 | 5 | 24 | 31 |