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Talking Points for Influenza A/H1N1 Oseltamivir Resistance

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Background

- While the flu vaccine is the first and best way to prevent influenza, antiviral drugs offer a second line of defense to treat or prevent influenza infection
- Antiviral drugs must be prescribed by a health care professional. Antiviral drugs differ in terms of who can take them, their effectiveness, how they are given, their dose, and side effects.
- Two antiviral drugs are currently recommended for use in the U.S. during the 2008-2009 influenza season: oseltamivir (brand name Tamiflu®) and zanamivir (brand name Relenza®)
 - Two others are FDA-approved in the U.S: amantadine, and rimantadine. Amantadine and rimantadine are not effective against influenza B viruses.
 - During the 2005-06 season, surveillance data showed that most U.S. influenza A (H3N2) viruses and some influenza A (H1N1) viruses were resistant to amantadine and rimantadine. This information led CDC to recommend against the use of amantadine and rimantadine for treatment and prevention of influenza during that influenza season and continuing through the 2008-09 season.
- During the 2007-08 flu season, a small increase in the overall number of influenza A (H1N1) viruses resistant to oseltamivir was observed. These oseltamivir-resistant viruses were seen in the U.S. and other countries worldwide.

Currently

- On December 11, the Centers for Disease Control and Prevention (CDC) released an MMWR Weekly article which discusses antiviral testing results, “Update: Influenza Activity --- United States, September 28--November 29, 2008”
 - This article can be found online at <http://www.cdc.gov/mmwr/PDF/wk/mm5749.pdf>
- In this MMWR article, 39 flu viruses from 11 states had been tested for antiviral resistance. Of all viruses tested, 28 / 39 (71.8%) were from only two states.
 - 25 viruses were the A(H1N1) subtype
 - All 25 were sensitive to zanamivir, amantadine, and rimantadine.
 - **24 / 25 (96%) of the A(H1N1) viruses were resistant to oseltamivir.**
 - 5 viruses were A (H3N2) and were sensitive to oseltamivir and zanamivir and resistant to amantadine and rimantadine.
 - 9 viruses were influenza B and were sensitive to oseltamivir and zanamivir.
- In today’s (December 12, 2008) CDC Weekly Influenza Surveillance Report (FluView), updated numbers are provided on antiviral resistance testing of influenza viruses in the US.

- 68 total influenza viruses have been tested. These viruses were from 15 states, with 63% from 2 states.
 - **45 / 46 influenza A (H1N1) viruses tested are resistant to oseltamivir.**
 - All influenza A (H1N1) viruses were sensitive to zanamivir, amantadine and rimantadine.
 - All influenza A (H3N2) viruses were resistant to amantadine and rimantadine but sensitive to oseltamivir and zanamivir.
 - This report is available online at <http://www.cdc.gov/flu/weekly/fluactivity.htm>
- All data currently available show no indication that the influenza A (H1N1) viruses that are resistance to oseltamivir cause a more severe illness or are transmitted more easily.
 - At this time, CDC is not making any changes to the current recommendations for antiviral drug use for influenza infection. Therefore, the use of oseltamivir and zanamivir for the treatment of influenza is still recommended at this time.
 - For the most up to date and complete guidelines regarding the use of antiviral drugs for the treatment of influenza, please see the Recommendations of the Advisory Committee on Immunization Practices (ACIP) for the Prevention and Control of Influenza. This document can be found online at <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr57e717a1.htm>
 - CDC will continue to monitor influenza antiviral drug resistance and will provide updates throughout the flu season.

Michigan-specific

- Michigan conducts influenza surveillance in multiple ways, including:
 - Testing and confirmation of influenza specimens at MDCH Bureau of Laboratories.
 - Tracking aggregate influenza-like illness reports from each county
 - Sentinel healthcare providers across the state that report influenza-like illness
 - Sentinel laboratories across the state that report respiratory virus data
 - Facility outbreaks due to influenza
 - Pediatric mortalities due to influenza
- Since the third week of November, MDCH has been reporting “sporadic” influenza activity for the state of Michigan to the CDC. The “sporadic” category is the lowest of 4 influenza activity levels. Thus, influenza activity in Michigan is still very low at this time.
- For the 2008-2009 influenza season, the MDCH Bureau of Laboratories has reported 3 laboratory-confirmed cases of influenza.
 - These 3 cases consist of 1 influenza A (H1N1), 1 influenza A subtype pending, and 1 influenza B.
 - These 3 MDCH lab-confirmed cases represent a small portion of influenza testing that is done across the state and may not be representative of what flu viruses are present in Michigan at this time.
- The one influenza A (H1N1) virus from the MDCH Bureau of Laboratories has been tested for antiviral resistance at CDC.

- This virus was resistant to oseltamivir (Tamiflu®). It is sensitive to zanamivir, amantadine and rimantadine.
 - This case was a child from Oakland County who was seen on an outpatient basis and has recovered.
- It is important to remember that it is difficult to draw any conclusions about influenza activity in Michigan at this time, because it is early in the season and there have been very few positive specimens on which to perform additional testing. Therefore, it is very important for healthcare providers and laboratories to consider submitting influenza specimens to the MDCH Bureau of Laboratories for further testing.
- The MDCH Bureau of Laboratories will continue to send positive influenza specimens, including influenza A (H1N1) specimens, to the CDC for antiviral resistance testing. Antiviral resistance testing often takes several weeks to months to complete, and thus cannot be used to guide treatment of individual patients.
- The flu vaccine is the single best way to protect against influenza. Anyone who wants to reduce their chances of getting the flu can get vaccinated. For information on receiving the flu vaccine, please contact your doctor's office or your local health department. Visit www.michigan.gov/flu for the most up-to-date flu information.
- It is not too late to get a flu shot. Although flu cases have already been confirmed in Michigan, flu activity often does not peak until January or later, and influenza can continue to circulate through spring.