Infection Control
In Practice
Dentistry’s Newsletter for Infection Control and Safety

Pandemic Pandemonium

History shows us that pandemics emerge suddenly, sicken and kill large portions of populations, are often diseases that originally infected animals and are extremely difficult to contain. In discussing the potential for influenza pandemic the Centers for Disease Control and Prevention (CDC) indicates that three conditions occurring together indicate pandemic; 1) a new influenza virus subtype must emerge; 2) it must infect humans and causes serious illness; and 3) it must spread easily and continue without interruption among humans.

Pandemic Diseases
Some of the diseases responsible for pandemics in the past include smallpox, bubonic plague, cholera, tuberculosis and influenza. In the 14th Century, a pandemic of bubonic plague wiped out about 25% of the European population. In more recent times, the so-call Spanish Flu pandemic of 1918-1919 killed between 20 - 40 million people worldwide. The threat of a pandemic can leave people feeling fearful and helpless. Whether natural or the result of a terrorist attack (bioterrorism), preparation is essential in minimizing the impact of such an event. Public health agencies including the Department of Health and Human Services (HHS), Centers for Disease Control and Prevention (CDC), Homeland Security and World Health Organization (WHO) are actively developing coordinated plans to respond if a pandemic does occur. Because dental personnel encounter a cross-section of the community and have close contact with relatively large numbers of individuals, understanding where to get reliable information during a pandemic is important. In non-hospital settings, there are things that will help everyone prepare and respond in the event of a widespread infectious epidemic or pandemic.

Avian Influenza
Most of us are aware by now that the H5N1 influenza virus (a form of avian flu) is generating concern among public health officials. If this or any other avian flu were to begin to spread easily from human to human, it has the potential to reach pandemic proportions since humans do not have natural immunity to this strain of the virus. The current concern provides incentive for health care workers to educate themselves about preparedness for a pandemic. Whether it be the H5N1 influenza or some other yet unidentified disease, a pandemic is possible in our lifetime. A pandemic can significantly affect individuals, businesses, health care systems and both government and private infrastructures. Public health officials have several strategies available in the event of a pandemic. The appropriate authorities determine which strategies, if any, are appropriate.

Social Distancing
Looking back on past influenza epidemics and pandemics, epidemiologist note that they often spread first among school chil-

Learning Objectives
After reading this article, the reader should be able to:

- Understand the significance of a pandemic.
- Determine what steps, if any, to take in the event of a pandemic.
- Plan for workplace health and safety during a pandemic.

continued on page 2
Pandemic Pandemonium
continued from front cover

...dren, camps and military units, indicating large numbers of people in close quarters provide the ideal environment for the emergence of a pandemic.

Social distancing involves a variety of practices that might include school closures, cancellation of large public events and minimizing close contact in workplaces and public areas. In a dental office, this would most likely be a voluntary measure. Encouraging patient that have symptoms or could be incubating the illness to reschedule routine appointments is another example of social distancing.

During a global pandemic, there could be restrictions on travel, rationing of medications and cancellation of large public and private events. Some experts do not support social distancing since some of the principles such as school closures affect only specific populations (i.e. students) and will not have a significant impact on groups other than those given restrictions.

Self-Shielding

In the event of a pandemic, some individuals will choose not to engage in certain activities such as school, work or public gatherings. This voluntary removal in an effort to prevent illness serves as a self-imposed quarantine and reduces the risk of infectious disease transmission for those individuals and perhaps the individuals they would have encountered had they continued their normal routine.

Voluntary self-shielding is an idea developed with bioterrorism in mind. In this model people or groups that are not affected by the pandemic voluntarily stay at home for a set period, depending on the spread of infection. The period could range anywhere from a few days to a few weeks. Self-shielding requires the participation of large numbers of the population and requires preplanning to enable people to avoid places that present a risk. This tactic prevents the shielded group from having contact with the ill, exposed individuals without symptoms or anyone suspected of harboring the infectious disease. If enough people engage in the self-shielding activity, the potential for limiting the spread of a disease is significant. -OSAP

Photo Credits

► Page 1: Rows of tents on lawn at Emery Hill in Lawrence, MA where victims of the 1918 influenza pandemic were treated. Photo courtesy of CDC.
► Page 2: Quarantine sign courtesy of CDC.
Compliance Corner

Centers for Disease Control and Prevention (CDC)
"Influenza pandemics are different from many of the threats for which public health and health-care systems are currently planning: "A pandemic will last much longer than most public health emergencies and may include "waves" of influenza activity separated by months (in 20th century pandemics, a second wave of influenza activity occurred 3 to 12 months after the first wave). "The numbers of health-care workers and first responders available to work can be expected to be reduced. They will be at high risk of illness through exposure in the community and in health-care settings, and some may have to miss work to care for ill family members. "Resources in many locations could be limited, depending on the severity and spread of an influenza pandemic. Because of these differences and the expected size of an influenza pandemic, it is important to plan preparedness activities that will permit a prompt and effective public health response. The U.S. Department of Health and Human Services (HHS) supports pandemic influenza activities in the areas of surveillance (detection), vaccine development and production, strategic stockpiling of antiviral medications, research, and risk communications. In May 2005, the U.S. Secretary of HHS created a multi-agency National Influenza Pandemic Preparedness and Response Task Group. This unified initiative involves CDC and many other agencies (international, national, state, local and private) in planning for a potential pandemic. Its responsibility includes revision of a U.S. National Pandemic Influenza Response and Preparedness Plan." Centers for Disease Control and Prevention. Key Facts About Pandemic Influenza Retrieved from www.cdc.gov/flu/pandemic/keyfacts.htm on January 6, 2006.

Q & A
Will the flu vaccine I receive each year in the late Fall protect me against pandemic influenza? Currently, there is no vaccine to protect people from pandemic influenza. A vaccine probably would not be available in the early stages of a pandemic. When a new vaccine against an influenza virus is being developed, scientists work together to select the virus strain that will offer the best protection against that virus. Manufacturers then use the selected strain to develop a vaccine. Once a potential pandemic strain of influenza virus is identified, it will take several months before a vaccine will be widely available. If a pandemic occurs, the U.S. government will work with many partner groups to make recommendations guiding the early use of available vaccine. Adapted from questions and answers on pandemic flu www.cdc.gov

Glossary

Bubonic Plague: Also called "black plague", originates with rodents and transmits to humans via fleas from infected rodents. Bioterrorism: The use of pathogens, such as disease-causing organisms to infect humans as a terrorist act. Pandemic: An epidemic occurring over a very wide area, crossing international boundaries and usually affecting a large number of people. Quarantine: Enforced isolation or restriction of free movement imposed to prevent the spread of contagious disease. Infrastructure: The essential systems of a population, including roads, utilities, water, sewage and other services.
Infection control recommendations for seasonal and pandemic influenza

In addition to other precautions, there are specific infection control recommendations for preventing the transmission of seasonal and pandemic influenza in healthcare settings. The checklist that follows from the HHS Pandemic Influenza Plan, Supplement 4, provides current public health guidelines. Depending on the setting in which you practice, all or some of the precautions are appropriate.

Infection control practices for healthcare personnel
- Limit contact between infected and non-infected persons.
  - Isolate infected persons (i.e., confine patients to a defined area as appropriate for the healthcare setting).
  - Limit contact between nonessential personnel and other persons (e.g., social visitors) and patients who are ill with pandemic influenza.
  - Promote spatial separation in common areas (i.e., sit or stand as far away as possible-at least 3 feet-from potentially infectious persons) to limit contact between symptomatic and non-symptomatic persons.
- Protect persons caring for influenza patients in healthcare settings from contact with the pandemic influenza virus. Persons who must be in contact should:
  - Wear a surgical or procedure mask for close contact with infectious patients.
  - Use contact and airborne precautions, including the use of N95 respirators, when appropriate.
  - Wear gloves (gown if necessary) for contact with respiratory secretions.
  - Perform hand hygiene after contact with infectious patients.
  - Contain infectious respiratory secretions:
    - Instruct persons who have “flu-like” symptoms (see below) to use respiratory hygiene/cough etiquette.
    - Promote use of masks by symptomatic persons in common areas (e.g., waiting rooms in offices or emergency departments) or when being transported (e.g., in emergency vehicles).
- Protocols for respiratory hygiene/cough etiquette include:
  - Education of healthcare facility staff, patients, and visitors on the importance of containing respiratory secretions to help prevent the transmission of influenza and other respiratory viruses.
  - Hand hygiene after contact with respiratory secretions.
  - Spatial separation, ideally >3 feet, of persons with respiratory infections in common waiting areas when possible.

CDC will update these recommendations if changes occur in the anticipated pattern of transmission (www.cdc.gov/flu)

Adapted from HHS Pandemic Influenza Plan, Supplement 4 available at: www.hhs.gov/pandemicflu/plan/sup4.html

— OSAP

Selected resources
- OSAP website - updated daily http://www.OSAP.org/displaycommon.cfm?an=1&subarticlenbr=218
- Official US government web site for information on pandemic influenza http://www.pandemicflu.gov/
- CDC Pandemic Influenza general information http://www.cdc.gov/flu/pandemic/
- CDC Pandemic Influenza information for health care providers http://www.cdc.gov/flu/pandemic/healthprofessional.htm
**OSAP Chart & Checklist**

**Quality Assurance**

This chart presents a few of the diseases that are either associated with past pandemics or bioterrorism threats. Understanding the symptoms, incubation periods and treatment options assists in the development of policies if any of these become a threat within your community.

<table>
<thead>
<tr>
<th>Disease</th>
<th>Symptoms</th>
<th>Incubation Period</th>
<th>Treatment</th>
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<tbody>
<tr>
<td>Anthrax</td>
<td>Sore that turns into blister with black area in center. Nausea, bloody diarrhea. Sore throat, fever, cough, body aches.</td>
<td>Up to 42 days from day of exposure.</td>
<td>60-day course of antibiotics such as ciprofloxacin, levofloxacin, doxycycline, or penicillin.</td>
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<td>Tuberculosis</td>
<td>Patients may have no symptoms or may experience malaise, weight loss, night sweats, chronic cough and coughing blood.</td>
<td>2-10 weeks.</td>
<td>Isoniazid, rifampicin, ethambutol, pyrazinamide alone or in combination.</td>
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<tr>
<td>Smallpox</td>
<td>High fever, head and body aches, and sometimes vomiting. A rash follows that spreads and progresses to raised bumps and pus-filled blisters that crust, scab, and fall off after about three weeks, leaving a pitted scar.</td>
<td>7-17 days.</td>
<td>No currently available treatment has proven effective. Smallpox vaccine is not available to the general public, but if an outbreak occurs there is enough vaccine for every person in the United States.</td>
</tr>
<tr>
<td>H5N1 Avian Influenza (in humans)</td>
<td>Anywhere from typical human influenza-like symptoms (e.g., fever, cough, sore throat, and muscle aches) to eye infections, pneumonia, severe respiratory diseases and other severe and life-threatening complications.</td>
<td>1-4 days (if the same incubation as typical seasonal influenza).</td>
<td>Two antiviral medications, oseltamivir and zanamivir, would probably work to treat influenza caused by H5N1 virus, but additional studies still need to be done to demonstrate their effectiveness.</td>
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<tr>
<td>Plague</td>
<td>Painful, swollen, often hot-to-the touch lymph node, fever and extreme exhaustion.</td>
<td>2-6 days.</td>
<td>Streptomycin or gentamycin, but a number of other antibiotics are also effective.</td>
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<tr>
<td>Cholera</td>
<td>Copious, painless, watery diarrhea and vomiting.</td>
<td>From less than 1 day to 5 days.</td>
<td>Oral rehydration salts.</td>
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**Selected Resources**

To help practices stay on track, OSAP provides this calendar listing typical schedules for periodic maintenance, recordkeeping, and infection control activities. This schedule is intended only to serve as a guide. Proper practices, procedures, and maintenance schedules can vary according to the kinds of products used, the practice type, and patient volume. Always follow the device or equipment manufacturer’s instructions for maintenance and infection control.

**FEBRUARY 2006**

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<th>SUNDAY</th>
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<td>Clean evacuation traps</td>
<td>Update chemical inventory; discard expired supplies, drugs</td>
<td>Foil test ultrasonic cleaners</td>
<td>Waterline monitoring, Waterline maintenance</td>
<td>Waterline test sterilizers</td>
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<td>Waterline maintenance</td>
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<td>Clean evacuation traps</td>
<td>Check fire extinguisher operating pressure</td>
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<td>Waterline maintenance</td>
<td>Thomas P. Hinman Dental Meeting In Atlanta, GA through March 25</td>
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1. The 14th Century bubonic plague pandemic killed approximately _____________ of Europe’s population.
   a. 10%  
   b. 15%  
   c. 25%  
   d. 40%

2. The subtype of avian influenza currently generating concern is:
   a. H5N1  
   b. H1N1  
   c. H1N2  
   d. H3N2

3. Which strategy might include encouraging patients who have symptoms of illness during a pandemic?
   a. Self-shielding  
   b. Self imposed quarantine  
   c. Government quarantine  
   d. Social distancing

4. Which strategy might include voluntarily refraining from certain public and/or work activities during a pandemic?
   a. Self-shielding  
   b. Self imposed quarantine  
   c. Government quarantine  
   d. Social distancing

5. In the event of an influenza pandemic, healthcare workers are encouraged to promote spatial separation of people in common areas. This separation should be at least _______ feet.
   a. 3  
   b. 5  
   c. 7  
   d. 10

6. Which of the following groups may not exhibit typical flu-like symptoms when infected?
   a. Healthy adults  
   b. Young children  
   c. Teenagers  
   d. Healthcare workers

7. Which medications are used to treat smallpox patients?
   a. Isoniazid  
   b. Ciprofloxacin  
   c. Oseltamavir  
   d. No medications are proven effective

8. The incubation period for Tuberculosis is:
   a. 1-5 weeks  
   b. 2-10 weeks  
   c. 3-10 weeks  
   d. 5-15 weeks

9. Symptoms of Cholera include:
   a. Diarrhea and vomiting  
   b. Chronic cough  
   c. Swollen lymph nodes  
   d. Respiratory distress

10. The incubation period for influenza is:
    a. 1-4 weeks  
    b. 2-4 weeks  
    c. 1-4 days  
    d. 5-10 days

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Have you ever wondered if the material in the dentures might pose an infection control hazard when grinding into the subsurface on the denture in the laboratory?

Lining material poses a particular concern since its porosity may allow contamination below the surface that contacts the patients' oral tissues. The simple protocol that follows provides a reliable method to disinfect the denture, including the lining material.

1) Always clean the denture before attempting to disinfect by rinsing with copious amounts of water.
2) If stubborn debris such as calculus is present, remove by putting the denture in a sealed plastic bag or beaker containing stone remover (the product used to remove stone after processing acrylic in the lab) and placing in the ultrasonic cleaner.
3) After cleaning, immerse the denture in a container of full strength household bleach (5.25% sodium hypochlorite solution) and place in ultrasonic cleaner. The combination of bleach and cavitation penetrates the acrylic material, rendering the denture safe for grinding.
4) Rinse the denture thoroughly with running water to remove all residual bleach.

As a precaution, when handling materials in the laboratory, wear appropriate personal protective equipment such as mask, eyewear and gloves. Avoid using bleach as a disinfectant on prostheses that contain metal since they can experience corrosion due to bleach exposure.

Detailed information is available in the following journal: Yilmaz H, Aydin C, Bal BT, Ozcelik B. Effects of disinfectants on resilient denture-lining materials contaminated with *Staphylococcus aureus*, *Streptococcus sobrinus*, and *Candida albicans*. Quintessence Int. 2005 May;36(5):373-81.

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An OSAP member since 2002 and current member of both the OSAP and OSAP Foundation Board of Directors, Dr. Basquill is a dentist in private practice.

Do you have a practice tip you’d like to share with other OSAP members and subscribers? Send your suggestions for enhancing dental infection control and safety in practice to editor@OSAP.org. Be sure to include contact information, a photo, and a brief bio. Thanks!