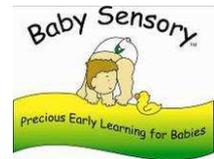


Swine flu: spread, prevention and treatment



By Dr. Lin Day, Baby Sensory

The emergence and rapid spread of a new strain of influenza, swine flu H1N1, has raised concern among parents and practitioners. At the start of the outbreak, some nurseries and schools closed to prevent the spread of the virus. However, swine flu is now widespread within communities and this approach is no longer recommended.

Even though most reported cases of swine flu have been mild and the vast majority of people have made a quick recovery, this doesn't mean that there is no cause for serious concern. It is possible that there will be a resurgence of the virus as the normal flu season draws near. Scientists are also worried that the virus may develop resistance to antiviral drugs in the months ahead.

Childcare settings and schools have an important role to play in preventing the spread of the virus, by taking sensible personal precautions and by following the good hygiene practices recommended by the Department of Health. Parents are also more likely to accept the need for good hygiene practice if they are kept fully informed of how the virus might spread and the likely effect of countermeasures.

Parents and practitioners can check out the appropriate websites (see links below) for the latest information and advice. Putting the information into practice could be one of the most effective measures in reducing the spread of the virus.

History of swine flu

Influenza (flu) pandemics have occurred three times in the last century. The worst one occurred in 1918/19 and resulted in an estimated twenty to forty million deaths. The 'Asian' and 'Hong King' pandemics in 1957 and 1968 were much less severe and resulted in an estimated one to four million deaths. Human-adapted avian viruses (bird flu) are now believed to be the most likely origin of the last three influenza pandemics.

The 2009 H1N1 strain is closely related to the avian viruses that circulated in 1957 and 1968. So far the virus has spread to 168 countries in all continents. Although more than 160,000 infections have been confirmed worldwide, the mortality rate appears to be similar to that of 'ordinary' influenza. The vast majority of fatalities have been connected to underlying medical conditions or to serious bacterial co-infections.

Scientists believe that the close proximity of poultry and pigs in different parts of the world has resulted in the new re-assorted H1N1 strain. Viruses have a remarkable ability to mutate or change. This is why transmission of swine flu H1N1 from pigs to humans is now possible.

Viral infection

The H1N1 virus enters the human body through openings such as the nose and mouth and through cuts, wounds and surgical incisions. The virus is then drawn to deep lung tissue, where gas transfer occurs. Once inside the cell, the virus releases its genetic material, and begins making identical viruses from the host cell's protein. New viruses make their way back through the cell's membrane and attack new host cells. This process continues until the body's immune system develops enough antibodies to defeat the virus.

In severe cases, the H1N1 virus can damage the protein responsible for clearing fluid from the lungs. Fluid then accumulates in the lungs, which restricts breathing and makes oxygen delivery into the bloodstream very difficult.

Spread of the virus

Swine flu spreads when a person coughs or sneezes. If another person breathes in the virus, they may become infected. The virus also spreads through hand-to-face contact if the hands are contaminated.

Tiny droplets containing the virus may land on the surface of a hard object where it can live for up to 24 hours. The virus can also live on soft porous materials for about 20 minutes. If a person touches an infected object, they may transfer the virus to their nose, eyes or mouth.

Toddler groups, childcare settings, schools, public transport and places where adults and children gather can help spread the virus. However, the general advice is that people should continue their normal activities, unless there are exceptional circumstances.

Symptoms

The time between infection and appearance of symptoms is believed to be between two and seven days. Low doses of the virus may be shed 24 hours before the appearance of symptoms. The most infectious period is with the development of symptoms, which can last for up to five days in adults and about seven days in children. As symptoms subside, people become less infectious. There is no risk of passing the infection on to others once the symptoms have gone.

The most common symptoms include a fever (high temperature of 38°C/100.4°F or more), sore throat, runny nose, sneezing, coughing, headache, aching muscles and limbs and loss of appetite. Some people may experience nausea, vomiting or diarrhoea.

If swine flu is suspected, the best advice is to stay at home and contact your GP or helpline (see links below) for an assessment. If further diagnosis is required, infection can be confirmed by the presence of antibodies in the blood.

High risk groups

People who suffer from diabetes, heart or lung disease, immune system disorders and obesity may be vulnerable to secondary infections such as tonsillitis (infection of the tonsils), bronchitis (infection of the airways), meningitis (infection of the brain and spinal cord), encephalitis (inflammation of the brain) and pneumonia (infection of the lungs).

Babies who get croup and children who are susceptible to asthma or bronchitis may be at risk from the virus. Expectant mothers may also be vulnerable to infection because their immune systems are naturally suppressed during pregnancy. Although the risk is small, serious secondary infections such as pneumonia can lead to premature birth in the second or third trimester. However, most pregnant women experience mild symptoms and recover from the illness within a week.

In the UK, most cases of swine flu have been reported in people younger than 60. Some older people may have partial resistance to the H1N1 virus, due to exposure to a similar flu virus in a previous pandemic.

Prevention

Practitioners can help to prevent the infection from being spread to others by ensuring that the following hygiene practices are followed:

- Staying at home if swine flu is suspected.
- Frequent hand washing with soap and water.
- Use of an alcohol based hand sanitizer or gel (where there is no easy access to hand-washing facilities) for staff, parents and visitors to the setting.
- Use of alcohol-free hand gel (which does not dry out or irritate the skin) for children.
- Regular disinfection of hard surfaces, play equipment and toys with a bleach-free cleaning gel or disinfectant.
- Use of antiviral tissues and provision for safe disposal.
- Regular washing of soft toys and fabrics.

Other suggestions might include sterilising toys in the microwave for about 10 seconds. Bacterial activity can also be slowed down by freezing toys overnight.

To help reinforce the basic hygiene measures described above, the Department of Health has produced a range of posters, nursery rhymes, and comic-strip stories that can be downloaded from the Internet (see link below). Template letters can also be downloaded and amended for use to ensure that parents and visitors follow the advice before entering the nursery or classroom.

Childcare settings can also ensure that up to date contact details for each child are maintained so that parents can be contacted in an emergency.

Treatment

In the majority of cases, the severity of the illness appears to be no worse than ordinary influenza. Most people make a full recovery in a short space of time with pain relief, supportive care and plenty of fluids.

Severe infections of swine flu may be treated with antiviral medication shortly after the appearance of symptoms. Antivirals are not a cure, but they can help to relieve the symptoms, shorten the duration of the illness and reduce the potential for serious complications such as pneumonia. They can also reduce transmission of the virus from person to person. Antiviral medication is not usually prescribed unless there is an underlying medical problem or a risk of complications. Scientists are concerned that indiscriminate use of antivirals could ease the way for drug-resistant strains of the H1N1 virus in the future.

When symptoms are severe, the main antiviral drug oseltamivir (trade name Tamiflu), may be prescribed in capsule form or as a drink. The drug prevents the virus from entering healthy cells and becomes active in the body once it passes through the liver. Tamiflu can reduce the duration of symptoms by up to two days, although nausea has been reported to be a side effect.

The antiviral drug zanamivir (trade name Relenza), may be prescribed as a preventative measure via an inhaler (oral dosing is ineffective). The drug stops the virus from replicating itself in infected lung cells. It can reduce the duration of symptoms by 36 hours. Possible side effects may include headaches, nausea, allergic reactions and diarrhoea. Relenza is not recommended for adults and children with asthma or respiratory disorders as it can cause wheezing and coughing.

Pregnancy

In pregnancy, Relenza may be prescribed as a preventative measure. The drug easily reaches the throat and lungs, where it is most needed. Low levels of the drug that reach the placenta are unlikely to harm the developing baby. Tamiflu may be prescribed if the symptoms are very severe. Antiviral treatment is thought to be much safer than the risks posed by swine flu during pregnancy.

Babies and children

Relenza is not licensed for use in babies under the age of one year, although a reduced dose of Tamiflu may be prescribed to treat severe symptoms under close medical supervision. However, scientists conclude that treating babies and children with antiviral medication does very little, except shorten the duration of the illness by a day or two. The general advice is to treat babies and children with plenty of liquids, lots of rest and aspirin -free medication to control temperature. Relenza can be given to children over the age of seven years under adult supervision.

Vaccination

Although swine flu has not become more severe in recent months, scientists, predict a possible resurgence of the virus in the winter. However, no one is really certain what the precise nature of the impact will be.

Several countries, including the UK, have taken precautionary measures to reduce the spread of swine flu through major vaccination campaigns. However, the slow growth rate of the virus in the test medium has led to a delay in the production of the vaccine.

The vaccine does not carry a 'live' virus, so it cannot transmit swine flu. Instead, the vaccine works by mimicking the H1N1 virus, which helps the body develop antibodies against certain inactivated viral proteins. Any symptoms experienced after vaccination are unrelated to swine flu. At present, there appears to be no evidence of risk from the swine flu vaccine.

Vulnerable groups of people or those at most risk of developing secondary complications will be offered the vaccine first. Although children under the age of five years seem to be susceptible to the H1N1 virus, they are not a priority group for vaccination at the moment. Vaccination in the wider healthy population may depend on how the pandemic evolves and on emerging clinical data on the use of the vaccine.

Web links

There is a wealth of information to be found on the Internet including educational games for children and teaching resources. Parents and practitioners may find the following sites helpful:

Materials, rhymes, posters and templates can be downloaded from: www.teachernet.gov.uk

For more detailed information on influenza viruses and the impact of past pandemics, visit: www.dh.gov.uk/pandemicflu

For general information and antiviral medication, visit: www.pandemicflu.direct.gov.uk

Other useful sites include:

European Centre for Disease Control www.ecdc.eu.int

Health and Safety Executive www.hse.gov.uk

Health Protection Agency www.hpa.org.uk

National Travel Health Network and Centre www.nathnac.org

World Health Organization www.who.int