HEALTH TALK on
Understand Seasonal Flu, Human Swine Flu and Hand-foot-mouth Diseases

Infection Control Branch of Centre for Health Protection
December 2009
CONTENTS

1. Seasonal Flu
2. Human Swine Flu
3. Hand-Foot-Mouth diseases and Enterovirus 71
Influenza (Flu)

- Three types of virus: A, B & C
- Subtypes depend on the surface antigens: haemagglutinin (H) & neuraminidase (N)
- Resulting in H1N1, H3N2, H5N1 influenza etc
Human Influenza

• **Typical Incubation period:** around 2–4 days

• **Symptoms:**
  – fever,
  – headache,
  – myalgia (muscle pain),
  – running nose,
  – cough, and
  – sore throat.
Route of transmission

• Droplet transmission (>5um), within 1 meter

• Droplet nuclei generated during coughing and sneezing
Why we cannot have life long immunity after influenza infection?

- Antigenic drift → seasonal influenza
- Seasonal outbreaks of influenza due to influenza viruses from time to time give rise to new varieties, In other words, each year, a slight change in influenza virus, and to generate new viral strains.
- Minor variations of these viruses would lead to the outbreak of seasonal influenza
Seasonal influenza – Management

• Infected persons should take adequate rest and drink plenty of water.
• Supportive treatment can relieve symptoms.
• Antiviral agents can reduce the severity and duration of illness but must be used under doctor's prescription and given in the early stage of illness.
• Antibiotics are unnecessary unless influenza is complicated by bacterial infection.
• If symptoms persist, one should consult a doctor.
Seasonal influenza – Prevention

Build up body resistance helps to prevent influenza infection.

- Observe personal hygiene
- Observe environmental hygiene
- Vaccination

There is effective influenza vaccine to prevent influenza and its complications.
Why do we need seasonal flu vaccination?

- Influenza virus is very easy to spread by coughing or sneezing.
- Influenza virus in contact with the objects after we touch our mouths, noses or eyes.
- No symptoms prior to contagious
- Influenza vaccine is the most effective way in preventing seasonal influenza and its complications
Seasonal Flu Vaccine

- Consists of three inactivated influenza vaccine:
  - An Influenza A (H1N1) influenza virus
  - An Influenza A (H3N2) influenza virus, and
  - A kind of influenza B virus
Who should be vaccinated?

1. elderly home residents
2. the long-term disabled residents
3. 65 years of age or above
4. long-term illnesses
5. health care workers
6. poultry workers
7. children aged 6 months to 5 year old
8. pregnant women
Seasonal Flu Vaccine

- After vaccination, it takes two weeks to be effective.
- Inactivated vaccine is manufactured by dead virus.
- Inoculation of inactivated influenza vaccine will not cause influenza.
Side effects of vaccine

- Redness or mild pain at the vaccination site appears 6-12 hours after injection and lasts for the 1-2 days (15-20%)
- Others:
  - Fever, fatigue, and muscle pain (1-10%)
  - Fatal complications are rare.
Human Swine Influenza
(H1N1)
Global Situation

WHO declared pandemic alert phase 5 on 29 Apr 2009
WHO named the virus as influenza A (H1N1) virus on 1 May 2009
Pandemic Alert Level phase 6

**PANDEMIC INFLUENZA PHASES**

- **PHASES 1-3**: Predominantly animal infections; few human infections
- **PHASE 4**: Sustained human to human transmission
- **PHASES 5-6 / PANDEMIC**
- **POST PEAK**: Possibility of recurrent events
- **POST PANDEMIC**: Disease activity at seasonal levels

Department of Health
Human Swine Flu

- Originally known to circulate among pig populations, the swine flu viruses do occasionally infect human beings.
- Human-to-human transmission has occurred.
- Human beings have no immunity to humans swine influenza, so it can spread rapidly especially among children and adolescence.
# Global Situation (as of 20\textsuperscript{th} Nov)

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<th>District</th>
<th>Cases</th>
<th>Death</th>
<th>Case Mortality Rate</th>
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<tbody>
<tr>
<td>WHO Regional Office for Africa (AFRO)</td>
<td>15503</td>
<td>104</td>
<td>0.67%</td>
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<tr>
<td>WHO Regional Office for the Americas (AMRO)</td>
<td>190765</td>
<td>5360</td>
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<tr>
<td>WHO Regional Office for the Eastern Mediterranean (EMRO)</td>
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<tr>
<td>WHO Regional Office for Europe (EURO)</td>
<td>Over 154000</td>
<td>At least 650</td>
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<tr>
<td>WHO Regional Office for South-East Asia (SEARO)</td>
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<td>738</td>
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<tr>
<td>WHO Regional Office for the Western Pacific (WPRO)</td>
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<td>644</td>
<td>0.36%</td>
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<tr>
<td>Total</td>
<td>Over 622482</td>
<td>At least 7826</td>
<td>1.26%</td>
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</table>
## Basic Reproduction Number Ro

<table>
<thead>
<tr>
<th>Diseases</th>
<th>Transmission Route</th>
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<td>Airborne</td>
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<td>SARS</td>
<td>Airborne droplets</td>
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<td>1918 Pandemic</td>
<td>Airborne droplets</td>
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<td>1968 HK Flu</td>
<td>Airborne droplets</td>
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<td>H1N1HSI</td>
<td>Droplets</td>
<td>1.3-3.3</td>
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<tr>
<td>Avian Flu</td>
<td>Droplets</td>
<td>1.3</td>
</tr>
<tr>
<td>Seasonal Flu</td>
<td>Droplets</td>
<td>1.3</td>
</tr>
</tbody>
</table>

Secondary attack rate 22-33% (c.f. 5 – 15% for seasonal flu)
May increase in second and subsequent waves
Age distribution & age-specific attack rates of HSI cases (May 1 – Nov 3)

< 20 years old: 70.0%
< 30 years old: 81.4%
65 years or above only 1.13%
Age distribution of HSI cases & percentages requiring hospitalization*

Overall percentage of cases requiring hospitalization was 13.9%
*For cases confirmed between June 27 & Sep 27 (during mitigation phase and before change of testing strategy)
Human Swine Flu Symptoms

The symptoms of human swine influenza are usually similar to those of human seasonal influenza and include:

- fever,
- cough,
- sore throat,
- runny nose,
- muscle pain and
- headache.

- Some people infected with swine flu may also have vomiting and diarrhoea.
Human Swine Flu - Mode of transmission

• Human-to-human transmission of swine flu is thought to occur in the same way as seasonal flu is spread among people
  – mainly through coughing or sneezing.
  – People may also become infected by touching objects soiled with flu viruses and then touching their mouth, nose or eyes.
• Infectious Period
  – It is presumed that as with seasonal influenza virus, a person may infect another person 1 day before symptoms start, and up to 7 days after becoming sick.
  – This can be longer in some people, especially children and people with weakened immune systems.
  – People with swine flu virus infection should be considered contagious for as long as they show symptoms.
Human Swine Flu – Prevention

• Should have symptoms of respiratory tract infection or fever, you should wear mask and seek medical advice.
• Do not go to work or school if you develop influenza-like symptoms.
• Get HSI vaccination.
Human Swine Flu – Vaccination

• The Government will provide human swine influenza vaccine to five target groups:
  1. healthcare workers;
  2. persons with chronic illnesses and pregnant women;
  3. children between the age of 6 months and less than 6 years;
  4. elderly persons aged 65 years or above; and
  5. pig farmers and slaughterhouse workers.
Local expert warns the second wave pandemic in coming Spring
Human Swine Flu – Vaccination

- Aged from 6 month up to 3 years
  - 0.25ml intramuscular injection x 2 doses, at least 3 weeks apart
- Aged from 3 years up to 8 years
  - 0.5ml intramuscular injection x 2 doses, at least 3 weeks apart
- Aged 9 years up
  - 0.5ml intramuscular injection x 1 dose
Hand-foot-mouth disease
What is Enteroviruses?

Enterovirus group
- Polioviruses with three types,
- Coxsackie viruses with 23 type A and 6 type B,
- Echoviruses with 31 types
- Enteroviruses 68 ~ 72 types
- EV 71 is the latest viruses found in group which has the highest morbidity and mortality especially in nervous system complications.
What is a HFMD?

Causative agent

- Hand, foot and mouth disease (HFMD) is a viral infection commonly seen in infants and children. It is usually caused by a group of viruses called Enteroviruses.
- The most common causative agent is Coxsackie virus A.
- Enterovirus 71 (EV 71) is also one of the causative agents for HFMD.
- Individual cases and outbreaks occur worldwide, more frequently in summer and early autumn.
What is a HFMD?

Mode of Transmission

Mode of transmission

- HFMD is transmitted from person to person by direct contact with nose and throat discharges, saliva, fluid from blisters, or the stool of infected persons

Incubation period is 3-7 days.

- The patient is contagious.
- The patient may not aware of his infectivity.
What is a HFMD?
Mode of Transmission

- The first week after onset is the highest contagious
- discharged patients will continue to shred the virus, so their faeces, nose and mouth secretions are still infectious
  - Enterovirus can sustainable in the patient's mouth and nose secretions up to 3 ~ 4 weeks
  - Virus shredding from gut can sustain as long as 6 to 8 weeks
Symptoms

• fever,
• sores in the mouth,
• a rash with blisters,
• poor appetite,
• Malaise,
• sore throat,

• Complications are very rare
• Rarely, EV71 may cause more serious diseases, such as encephalitis, or a poliomyelitis-like paralysis.

Acknowledgement to Paediatric Infectious Unit, HA Infectious Disease Centre for the clinical photos
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What is EV 71 infection?

- The first case was reported between 1969 to 1970 in California USA and a new enterovirus was found.
- Later outbreaks were reported in Taiwan, Singapore, Malaysia
- Among all types of enterovirus infection, EV71 infection has particularly serious complications in the nervous system.
EV 71 infection – mode of transmission

- Contact transmission: Contact transmission (Direct or Indirect)
- Enteroviruses are classified as non-envelop virus in virology, and are resistant to inactivation in environment
- An appropriate concentration of household bleaching agent is therefore required to disinfect them effectively
What is EV 71 infection?

• Symptoms:
  – Are not difference from typical hand-foot-month diseases
  – Prolong in feverish duration
  – Most of the patients recover uneventfully
  – A small group will have complications include viral encephalitis and polio-like symptoms
  – Present more complications than other infections caused by Enteroviruses

• High Risk Groups
  – Children under age of 5
EV 71 Infections

- Hand-foot-mouth disease
- Herpangina
- Acute hemorrhagic conjunctivitis
- Nervous system complications
  - encephalitis
  - aseptic meningitis
  - acute flaccid paralysis
  - myoclonic jerk
- Pulmonary edema and pulmonary hemorrhage

- Most infected cases are asymptomatic (around 50～80%) or mild flu-like symptoms, patient will develop immunity after recovery.
When should we seek medical advice immediately?

• Parents should seek medical advice if their children having HFMD developing the following symptoms after 7 days:
  – Persistent and high fever >39 °C;
  – Drowsiness;
  – Weakness;
  – Loss of appetite and low urine output;
  – Breathless;
  – Repeated vomiting;
  – Over sleepiness or irritable; or
  – Persistent and involuntary jerks.
Summary

• Seasonal influenza and Human swine influenza
  - Both vaccination and infection control measures can prevent spread

• Hand-foot-mouth disease and EV71 infection
  - Infection control measures are very important

• You can browse CHP website for up-to-date information at http://www.chp.gov.hk
Thank You