



Pandemic lesson plan

In this lesson, students develop their understanding of the conditions for a pandemic and the impact of pandemics on communities.

Students investigate examples of pandemics in the past and the effects of these events on local communities. Students explore pandemic risk levels around the world and identify protective actions to reduce the risk.

Australian Curriculum: Science
UPPER PRIMARY / LOWER SECONDARY

ITEMS

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Australian Institute for
Disaster Resilience

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Pandemic lesson plan

Objectives

Participating in this lesson will enable students to:

- develop understanding of the nature of pandemics and how they spread
- research and investigate historical cases of pandemic and their impact on communities
- identify ways to reduce the risk of exposure to pandemics

REQUIRED RESOURCES

- 'My pandemic project' activity sheet
- Computers with internet access

Learning areas

YEAR 6 SCIENCE

- | | |
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| ACSHE098 | Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena and reflects historical and cultural contributions |
| ACSHE100 | Scientific knowledge is used to solve problems and inform personal and community decisions |

Lesson steps

Get the facts

The word 'pandemic' is used to describe an epidemic that affects the whole population across every continent. If left unchecked, a pandemic can destroy towns and cities, even countries. The great pandemics include the Black Death (mid 1300s), which wiped out 70 per cent of Europe's population by 1400. The Great Influenza Pandemic of 1918-1920 killed up to 100 million people worldwide.

In recent times, a new human influenza virus that was discovered in Mexico in April 2009 was identified as Pandemic H1N1 2009, also referred to as 'swine flu'. This strain of influenza spread rapidly throughout the country and across borders. The first case of H1N1 was confirmed in Australia on 9 May 2009.

As at 18 December 2009 there were 37,537 confirmed cases of H1N1 in Australia, although health officials believe that this is only a small proportion of the actual cases. At 18 December 2009, 191 people had died as a result of contracting H1N1, with Indigenous persons accounting for 13 per cent of the deaths. Reports indicate that most of those who died had underlying medical conditions; including cancer, diabetes mellitus and morbid obesity, and only a small number of deaths had occurred where the individual was previously healthy. The median age of death is 54 years (range 3 to 86 years of age), compared to the median age for deaths from seasonal flu from 2001 to 2006, which was 83 years.

Time to investigate

Students can investigate some background information on pandemic, individually, in pairs or in groups to find answers to the following:

1

What is a pandemic?

2

In Australia, what can we immunise against?

3

What are some of the diseases/pandemics that Australia has encountered in the past?

4

Students present this information as a written report.

My pandemic project

Provide students with a 'My pandemic project' activity sheet. Students are to imagine they are going to present a paper to the World Health Organization on the effects of a pandemic. They are to use the dot points in the project sheet as a guide to the information they ought to provide. Students present their paper to the class as if they were attending a World Health Organization conference.

About pandemics

The world has experienced many pandemics throughout history, such as cholera, typhus, smallpox, measles, tuberculosis, leprosy, malaria, yellow fever and the human immunodeficiency virus (HIV/AIDS).

There have also been many influenza-related pandemics. One example is Pandemic H1N1 influenza 2009, also referred to as swine flu. Over time, many of these diseases have been controlled through the use of vaccines.

The World Health Organization has a six-stage classification to describe how a new influenza virus moves from the first few infections in humans to become a pandemic and what countries should do to prepare for and respond to a pandemic. It begins with the virus mostly infecting animals, with a few cases of animals infecting people, then moves through to the stage where the virus begins to spread directly between people. A pandemic is then declared when infections from the virus have spread worldwide.

Pandemics

The word 'pandemic' is a Greek word, with 'pan' meaning 'all' and 'demos' meaning 'people'. Throughout history, there have been many pandemics, spreading infectious diseases such as smallpox and tuberculosis. More recent pandemics include the HIV/AIDS pandemic and the Pandemic (H1N1) influenza 2009, commonly known as swine flu.

Australia also has its own system to describe each phase of a pandemic, in addition to the World Health Organisation classification system. The Australian pandemic phases describe whether the virus is spreading overseas or in Australia and what Australia plans to do as the disease enters and spreads throughout the country. A disease or condition is not a pandemic just because it is widespread or kills many people – it must also be contagious or infectious.

Pandemics throughout history

There have been several significant pandemics throughout history:

▶ Plague of Athens, 430 BC

A suspected outbreak of typhoid fever which continued for over four years.

▶ Antonine plague, 165-180 AD

This ancient pandemic, believed to be either smallpox or measles, was brought back to the Roman Empire by troops returning from campaigns in the Near East (now known as the countries of Turkey, Syria, Iraq, Israel, and Jordan). The disease resulted in up to 2000 deaths per day in Rome, which was only one quarter of the people infected. The total number of deaths has been estimated at five million.

▶ Plague of Justinian, 541-750 AD

This was the first recorded outbreak of the bubonic plague. It was reportedly responsible for eliminating a half of Europe's population between 550 and 700.

▶ The Black Death, mid 1300 AD

'The Black Death' refers to the outbreak of bubonic plague in Europe in the mid 14th century. Bubonic plague was spread by fleas that lived on plague-infected rats. These rats travelled across Europe on trading ships, spreading the disease.

The Black Death was one of the most devastating pandemics in history and came to Europe in October of 1347, spread swiftly through most of Europe by the end of 1349 and on to Scandinavia and Russia in the 1350s. It returned several times throughout the rest of the century. The Black Death is estimated to have killed 30 to 60 per cent of Europe's population.

▶ Third Pandemic, mid 1800 AD

This outbreak of bubonic plague started in China, spreading to all inhabited continents and killing ten million people in India alone.

► **First Cholera Pandemic 1816-1826 AD**

This pandemic began in Bengal then spread across India. It extended as far as China, Indonesia and the Caspian Sea.

Twentieth century influenza pandemics

In the twentieth century, the world experienced three influenza pandemics:

► **The Spanish flu 1918**

The Spanish flu swept across the world between 1918 and 1919. It tended to affect areas for up to 12 weeks and then would suddenly disappear only to return several months later. More people died during this pandemic than in the First World War. Worldwide, at least 50 million people are thought to have died. It has been estimated that about 25 per cent of the world's population was infected.

► **The Asian flu 1957**

Although the proportion of people infected was high, the illness was relatively mild compared to the Spanish flu. The first wave of this pandemic was concentrated in school children and the second in the elderly. It is estimated that the Asian flu resulted in two million deaths.

► **The Hong Kong flu 1968**

This pandemic affected mainly the elderly and is thought to have resulted in approximately one million deaths worldwide.

Recent pandemics

As well as the influenza pandemics, there have been other types of pandemics that have occurred in the twentieth and twenty-first century. One example of this is:

► **HIV/AIDS Pandemic**

The acquired immune deficiency syndrome (AIDS) pandemic is a widespread disease caused by the human immunodeficiency virus (HIV).

HIV/AIDS has emerged as one of the greatest global threats to the human population. HIV/AIDS was first recognised in 1981. Since then, it has led to the deaths of more than 25 million people, making it one of the most destructive diseases in recorded history. In addition to this, an estimated 33 million people are now living with HIV/AIDS worldwide, with five million of those in the Asia-Pacific region.

Pandemics: Be prepared

One of the most common forms of pandemic is influenza (flu). Influenza is a potentially life-threatening illness.

Influenza is a contagious disease of the nose, throat and lungs (respiratory tract), caused by influenza viruses. Each year, seasonal influenza causes serious infection and death in Australia and around the world, usually during winter.

What is an influenza pandemic?

An influenza pandemic occurs when:

- a new sub-type of influenza virus emerges that most people have not been previously exposed to, and are therefore more susceptible to
- the virus causes serious disease in humans
- the virus is easily and quickly spread between humans, infecting a large number of people and causing many deaths.

How can we slow the spread of influenza in the community?



In general, influenza viruses are spread in two ways:

- respiratory droplets from an infected person's coughs or sneezes (these droplets generally travel less than one metre)
- touching contaminated surfaces and then touching your mouth, nose or eyes.

One of the most effective ways to protect yourself, your friends or your family from influenza is to practise good personal hygiene:

- Wash your hands regularly with soap and water, or use an alcohol-based product (e.g. gel, rinse, foam) that doesn't require water – even when they are not visibly dirty. This is the most effective way of killing the influenza virus.
- Cover your mouth and nose when you cough and sneeze. Remember to put used tissues in the bin and wash your hands afterwards.
- Don't share personal items such as towels, bedding, toothbrushes and eating utensils. The influenza virus can spread when someone touches an object with the virus on it and then touches their eyes, nose or mouth.
- Clean surfaces. Flu viruses can live on hard surfaces for several hours, so surfaces should be cleaned with soap and water or detergent.
- Avoid close contact with others. Keep your distance from others and avoid going out in public when you are sick. You should not go to work or school, or attend other public gatherings.

- Use personal protective equipment as directed by health authorities. People who are coughing or sneezing or have other symptoms of influenza such as fever or muscle pain should be encouraged to wear a surgical mask to contain the virus and help prevent its spread.

Where can I get help?

If you are sick during an influenza pandemic it is advisable in the first instance to make contact with a doctor by phone rather than in person, to help reduce the spread of infection.

If there is an outbreak of influenza in your community:

- watch TV, listen to the radio or check newspapers for up-to-date information
- call the Australian Government Department of Health information line 1800 020 103 or visit [Pandemic Influenza](#) online. Information will also be available from your state or territory health department.

STUDENT ASSIGNMENT

My pandemic project

Become a pandemic expert

Imagine that you have been asked to deliver a paper on behalf of the World Health Organization on the effects of a pandemic.

There have been many different pandemics that have occurred throughout history. Select one of these and research as much as you can about your selected pandemic.

Below are some questions to help you research and develop your paper (assignment):

- What caused the pandemic?
- What were the symptoms and effects?
- How was it transmitted?
- How was it contained?
- Which parts of the world's population were most affected?
- How many people died? How many were affected?
- What was the cost to the community?
- What solutions would you put in place to prevent another occurrence of this pandemic?

Deliver your paper to your teacher and classmates as if they were at the World Health Organization conference.

Real life pandemic stories

Pandemic H1N1 influenza 2009

The 2009 influenza pandemic was a global outbreak of a new strain of H1N1 influenza virus derived from human, swine and avian strains. The disease caused by this virus was commonly referred to as 'swine flu'. The outbreak began in Mexico and then spread around the world.

Despite being called swine flu, the virus was not spread by eating pork or pork products. It was typically contracted by sneezing or coughing, which spread respiratory droplets from person to person.

The swine flu virus was mostly mild, however in a small proportion of people it caused severe health complications and, in some cases, death.

According to the World Health Organization (WHO), by May 2010, more than 214 countries had reported laboratory-confirmed cases of Pandemic H1N1 influenza 2009, with more than 18,036 deaths recorded. In Australia, there were 191 pandemic-related deaths reported.

On 10 August 2010, the Director-General of the World Health Organization, Margaret Chan, announced the end of the pandemic. The Australian Government declared the end of the pandemic in Australia on 1 December 2010, after the end of the 2010 influenza season.

Related links

What is a pandemic?

<http://www.health.gov.au/internet/main/publishing.nsf/Content/about-pandemic-influenza>

Immunisation

<http://www.immunise.health.gov.au/>

Global Influenza Programme

<http://www.who.int/influenza/en/>

Protecting yourself and others

<http://www.health.gov.au/internet/main/publishing.nsf/Content/panflu-protecting-1>



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