IN THIS ISSUE

Zika Virus: A World Health Emergency (Duration 20:08)
Spread by warm-climate mosquitoes, the Zika virus may cause more than a rash and fever. It may also cause birth defects in the children of infected mothers and could be linked to the mysterious Guillain-Barré disease. The World Health Organisation predicts this is a growing crisis with long-term implications for our health systems.

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Keeping Up With The Swine Flu, November 2009
Canada and the Swine Flu, September 2009
Avian Flu: Preparing for a Pandemic, January 2006
Confronting The SARS Outbreak, May 2003

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VIDEO REVIEW

Before Viewing

For some parents in Brazil, the joy of seeing their newborn child has been replaced with fear due to the spread of the Zika virus. A mosquito-borne contagion, Zika has been linked to birth defects like microcephaly — a condition where babies are born with an abnormally small head causing a host of brain development deficiencies. In February 2016, the World Health Organization (WHO) declared a global emergency because of the spread of the virus.

What impact could the WHO declaration have on travel, family planning and the spread of the Zika virus?

Viewing

1. Why is a relatively new virus such as Zika a challenge for scientists trying to combat its effects?

2. Scientists estimate that 80 per cent of people who have the Zika virus appear to have no symptoms. Why is this both a relief and danger in the fight against the virus?

3. How is the virus transmitted?

4. Why is it so difficult to isolate the impact of the virus on global populations?
5. What challenges do doctors face in trying to determine if there is a connection between the Zika virus and microcephaly? (Note: Microcephaly is a rare neurological condition resulting in the birth of an infant with an abnormally small head. The size of the head is related to poor brain development in utero.)

6. Some governments have advised women not to get pregnant until 2018. What can governments do to assist women who want to make this choice?

7. What can pregnant women or women planning to get pregnant do to avoid contracting the virus?

**After Viewing**

Scientists are trying to determine the link between the Zika virus and child birth defects and brain abnormalities by studying a group of women who were infected while they were pregnant.

1. What specific abnormalities and birth defects are scientists looking for?

2. How do you think pregnant women are feeling in affected areas right now? Describe the range of emotions they must be experiencing.
THE STORY

The emergence of Zika
In 1947, a scientist in Uganda tied a monkey to a tree in order to determine the effect of mosquito bites on the animal. After the scientist tested the monkey’s blood, he discovered a new virus which he named Zika after a local forest area. Little was known about this virus and few scientists bothered to study it. However, in 2015, numerous cases of the Zika virus were reported in South and Central America. The rapid spread of the virus shocked scientists and some warned of the prospect not only of an epidemic, but also of the possibility that the virus could become endemic — which basically means Zika would become a permanent part of the ecological composition of some nations. This proposition begs the questions: How did this virus spread so quickly and what can be done to stop the virus from spreading further?

An epidemic is the widespread occurrence of a virus or disease in a community. A virus or disease is described as endemic when it has become a regular occurrence over a prolonged period of time in a certain community.

Immediate impact
Few people in the world had heard of the Zika virus until reports from Brazil indicated a spike in the number of infants born with microcephaly. Microcephaly occurs when children are born with abnormally small heads and under-developed brains. These infants are prone to seizures and suffer from cognitive impairment. Doctors noted that most of the mothers of babies with microcephaly had been infected by the mosquito-borne Zika virus. However, recent studies seem to indicate that the virus can also be spread through a bite from an infected animal as well as through sexual transmission. Just recently scientists have warned that the Zika virus can also affect an infant’s spleen, liver and lungs. Infected adults may suffer from rashes, fevers and joint pain. Currently there is no vaccine. In addition to fetal defects, it is also believed that the virus can increase the risk of contracting Guillain-Barré syndrome — a condition that can cause temporary muscle paralysis. This is only increasing anxiety surrounding the impact of the Zika virus among the general population.

In March 2016, Brazil confirmed over 4,800 suspected cases of Zika-related microcephaly.
Long-term impact
As the spread of the virus continues, medical authorities like the Public Health Agency of Canada and the U.S. Center for Disease Control are cautioning pregnant women to avoid traveling to countries where the virus has been reported. The main areas affected are Central and South America. There have been isolated reports of cases in the United States and Canada involving people returning from the infected regions with the Zika virus. With global travel on the rise, there is concern that the virus may mutate and spread to other parts of the world. Authorities are particularly concerned about the Zika virus in relation to the Olympic Games in Rio, Brazil, scheduled for the summer of 2016. Athletes and delegations from most nations will be in Rio for the games. By their very presence, they will be vulnerable to the virus. Once these representatives return to their home countries, the virus may spread exponentially as mosquitoes and other insects transfer infected blood from one person to another. This could potentially create an epidemic that would put a severe strain on the health care systems of many nations. The situation could be even more challenging for nations fighting off parasites like malaria and viruses like Ebola.

Prevention
Since there is no vaccine for the Zika virus, people are being urged to take precautions. The mosquitoes bearing the virus are active in the summer months. People should wear long sleeve shirts and pants. They should use insect spray and try to avoid the outdoors at dawn and dusk when mosquitoes are most active. Areas where standing pools of water are located should be drained and homes should install screens on doors and windows. These precautions may not be effective in poorer neighbourhoods where there is little money for screens and where large groups of people live in cramped conditions. Some social activists have claimed that the rapid spread of the virus is a sign of how economic disparity can leave the poor most vulnerable.

The British bio-tech company, Oxitec, has developed a species of mosquito that infects its offspring and causes them to die in four days instead of the normal month long life span. It is hoped these genetically modified mosquitoes could help decrease the number of mosquitoes carrying contagion like the Zika virus.

Response to the crisis
With the rapid spread of the virus, the World Health Organization has created a list of countries where the risk of infection is highest. The list continues to grow beyond South and Central America to also include Pacific island nations such as Fiji. Meanwhile, scientists in Hawaii are using computer models to predict where the virus may spread as well as which nations are best prepared to deal with the infection. These scientists examine weather patterns for rain as well as the location of hospitals and airports. The more precipitation a region receives, the higher the chance of infection. The nearer hospitals are to airports, the faster potential cases can be treated. Until a vaccine can be developed, scientists can only try to predict the spread and issue warnings. It seems that, for the time being, the Zika virus will continue to confound scientists and spread beyond the affected regions.
ACTIVITIES

1. The threat of the Zika virus is having an impact on various individuals and organizations. Analyze the following list of reactions and hypothesize on the possible consequences of these reactions.

<table>
<thead>
<tr>
<th>Reactions</th>
<th>Possible Consequences</th>
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<tbody>
<tr>
<td>Restricting travel to infected areas</td>
<td></td>
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<tr>
<td>Nations opting out of the Olympic Games in Rio, Brazil</td>
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<tr>
<td>Lifting restrictions on artificial forms of birth control in infected areas</td>
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<td>Easing restrictions on abortion in infected areas</td>
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<tr>
<td>Creation of mutant mosquitoes to kill off infected insects</td>
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<tr>
<td>Restrict organ donations based on potential exposure to Zika</td>
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2. Public awareness campaigns have been created to warn people of the Zika virus. The campaigns provide people with advice on how to avoid infection. The Spanish version of Sesame Street has created a message for children showing them how they can help in avoiding infections. Watch the video. Go to NBC news website (nbcnews.com) and search the title “‘Adiós Zika! Elmo Teaches Kids in Caribbean, Latin America about Zika.”

a) What strategies are being presented?

b) How effective is the video in teaching people how to avoid being infected by the Zika virus?

3. At the moment, there is no vaccine for the Zika virus and scientists predict it could be one or two years before an effective vaccine can be created and distributed. There is concern in some quarters that pharmaceutical companies are stalling work on a vaccine because it might not be very profitable. These allegations have not been proven (in fact, it’s possible a vaccine could be incredibly profitable) but imagine if this claim was true. Should companies be allowed to make these kinds of decisions or should they be required to invest in research and development to find a vaccine?

4. One suggested solution to eliminate the mosquito threat is to re-introduce the pesticide DDT. This chemical attacks the insect’s brain but was banned worldwide in 2001. Why would this chemical be banned if it was effective in eradicating mosquito populations? Conduct a web search to locate the reasons for the ban. Do you feel DDT should be reintroduced? Provide a detailed answer.