

The flu and you!



GRADE
10

In this lesson, students will learn how the flu attacks the body as well as how to prevent and treat it.



Subject	SNC2D – Science
Suggested timing	70 minutes
Financial literacy objectives	At the end of this lesson, students will: <ul style="list-style-type: none">• consider the financial implications of behavior.

Curriculum expectations

Science, grades 9 and 10 (2008)
Biology: Tissues, Organs and Systems of Living Things

B1.3 Describe public health strategies related to systems biology (e.g., cancer screening and prevention programs; vaccines against the human papillomavirus [HPV] and measles, mumps, and rubella [MMR]; AIDS education) and assess their impact on society.

Assessment

Collect: Independent reading questions (Appendix D)
Use: Rubric (Appendix E)

What you need

- 12 sheets of recycled paper
- 30 index cards (one for each member of your class)
- Write one letter (from A-Z) on the bottom right hand corner of each card (if there are more than 26 students in your class, begin the alphabet again)
- Computer, projector, speakers and internet connection
- Flu season has hospital ERs scrambling across GTA (Appendix A)
- It's your health – Flu season (Appendix B)
- This year's flu vaccine cuts risk of illness by half – summary (Appendix C)
- Independent reading questions (Appendix D)
- Independent reading questions rubric (Appendix E)

Minds on

Divide the class into teams based on where they are seated (3-5 students). Hand out 2 sheets of recycled paper to each team and instruct them to write “True” in large print on one sheet and “False” in large print on the other.

Using the True and False questions listed below, read out the questions to the class one at a time. After each question, give teams 10 seconds to choose an answer. Then ask each team to give their answer to the question by holding up one of their sheets of paper.

1. Many common illnesses are caused by viruses. (true)
2. Viruses are easily killed by drugs such as antibiotics. (false)
3. Once you have contracted a specific virus, you will not get sick from this virus again because of the antibodies produced in your body. (true)
4. Many diseases caused by viruses can be avoided through vaccination against the virus. (true)
5. Viruses are very fragile and cannot live on surfaces outside of the human body. (false)
6. Viruses have the ability to change themselves, or mutate, over time. (true)
7. Viral illnesses cannot be transferred from animals to people. (false)
8. The only way to transmit viruses is through close physical contact with an infected person. (false)
9. Viruses can become resistant to drugs used to treat them. (true)
10. One of the best ways to prevent the spread of viral diseases is frequent, thorough hand washing. (true)

Source:

PBS Newshour Extra,

http://www.pbs.org/newshour/extra/teachers/lessonplans/health/swine_flu_answers.pdf

Discuss answers as a class and provide background information and details after each question.

Ask students by a show of hands, who in the class has a part-time job. Then ask students to take out calculators (if they have them) and give the class the following scenario:

If you were sick with the flu for several weeks, how much money would you lose per week because you were unable to work? How will this affect your personal budget? Which expenses would you eliminate to accommodate for this? (For students who do not have a part time job, they can estimate using the minimum wage rate.)

Context for learning

Bill Fold is a character who is constantly getting himself into financial scrapes. Use the scenario below to provide students with a context for learning.

After a few days, Bill has a high fever and has to take one week off from school and work. Because he has fallen behind in school, he has to take a second week off from work to catch up on his assignments. Losing two weeks of pay has cut his month's budget in half! What should Bill do now? What could Bill have done to prepare for this sudden decrease in his pay?

Action

Ask students to brainstorm definitions of a virus and discuss as a class. Write a definition on the board and ask students to copy it into their notebook.

Pose the following question to the class: How do viruses spread? Write key words from students' answers on the board.

Activity: Virus handshake

Distribute one index card to each student in your class. Tell them to disregard the letter on the corner of the card. Ask students to stand up from their desks and get 4 signatures of four different classmates on their card. Once every student has 4 signatures, ask everyone to sit back down at their desk.

Explain to students that each signature on their card represents a handshake with that classmate. Ask the students who have a "Q" or an "X" written at the bottom of their card to raise their hands. Explain that these students were infected with a flu virus. Ask these students to stand up. Then ask every student who has either of these students' signatures on their card to stand up. Then ask every student who has any of those students' signatures on their card to stand up.

Explain that everyone standing were either directly exposed (second group to stand up) or indirectly exposed (third group to stand up) to the flu virus. Discuss how this can lead to epidemics of the flu virus in a short period of time.

Watch the video "*Flu Attack! How a Virus Invades Your Body*" as a class, http://www.youtube.com/watch?feature=player_embedded&v=Rpj0emEGShQ.

Hand out Appendix D (Independent reading questions) to each student. The questions are based on the following 3 articles:

- The Toronto Star article summary (Appendix A)
- It's your health — Flu season (Appendix B)
- The Globe and Mail article summary (Appendix C)

If computer access for each student is available, direct them to the links to each article found in Appendix D. If computer access is not available, hand out Appendices A, B, and C article summaries to each student to use instead.

Instruct students to read independently and answer the questions in Appendix D on a separate sheet of paper. Announce that answers to Appendix D will be collected at the beginning of the next class.

Action
(cont'd)

Before giving class time to work on the questions, review literacy techniques for reading informational texts. Impress upon students to read the questions first and then skim the articles for relevant information.

Allow for some class time to work on Appendix D questions.

Accommodations: For English language learners and students who struggle with reading comprehension, provide a definition sheet or highlight the portions of each article that the students should focus on.

**Consolidation/
debrief**

Remind students that answers will be collected at the beginning of the next class.

As a class, watch the video *Rick Mercer Report, Rant - Flu Shot*, <http://www.youtube.com/watch?v=whks4DUPvXM>.

As a class, discuss questions below:

1. Do you feel that the province should continue to fund flu shots?
2. What strategies can the province use to raise the number of residents who choose to take the flu shot?
3. How can the flu affect you financially?
4. What type of jobs offer paid sick days? Which type of jobs will not?
5. What can you do health-wise to protect yourself from the flu?
6. What can you do budget-wise to prepare yourself to handle unexpected expenses when you are unable to earn income?



The flu and you!

Flu season has hospital ERs scrambling across GTA – summary

Adapted from the article: “Flu season has hospital ERs scrambling across GTA”, published by the Toronto Star on Wednesday, January 16th, 2013

Flu season has started earlier than usual and the highest patient volume with flu-like symptoms occurred at the start of the new year. Over the holiday season, people gathered with family and friends which led to more people being exposed to the flu virus.

Toronto Public Health reported that there had been 1,180 lab-confirmed influenza cases between September and Tuesday which is more than triple the usual number by this time of year. Hospitals have seen a record number of patients over the last month. Brampton’s hospital had about 372 emergency visits per day in the last month, which is a 22 per cent spike. St. Michael’s Hospital has seen approximately 50 per cent increase in volume of patients with flu-like illnesses compared to recent years. In addition, those who are ill are having more severe symptoms. The demand on hospital staff and services is high. Hospitals are challenged when their staff also fall victim to the virus. In addition, hospitals have to screen patients and isolate potentially infectious people and perform extra precautionary cleaning. This is in addition to other respiratory illnesses.

Source: McConnell, Colin. (2013, January 16). Flu season has hospital ERs scrambling across GTA. The Toronto Star, News/GTA, http://thestar.com/news/gta/2013/01/15/flu_season_has_hospital_ers_scrambling_across_gta.html (accessed on April 12, 2013).



The flu and you!

It's your health – Flu season

Protect yourself, your family and your community

The flu (influenza) is a common seasonal infection of the airways and lungs that can spread easily from person to person.

When someone with the flu sneezes or coughs, the virus can travel through the air and you can breathe it in. The virus can also land on surfaces like doorknobs, toys and phones. If you touch something with the flu virus on it and then touch your eyes, nose or mouth, you can get the flu.

The flu is not a cold. A cold is a mild infection of your nose and throat. A cold might linger, but the symptoms will be mild.

Recognize the symptoms

Symptom	Cold	Flu
Fever	rare	usual – high fever (102°F/39°C to 104°F/40°C) – sudden onset, lasts 3-4 days
Headache	rare	usual – can be severe
General aches and pains	sometimes – mild	usual – can be severe
Fatigue and weakness	sometimes – mild	usual – severe, may last 2-3 weeks or more
Extreme fatigue	unusual	usual – early onset – can be severe
Runny, stuffy nose	common	common
Sneezing	common	sometimes
Sore throat	common	common
Chest discomfort, coughing	sometimes – mild to moderate	usual – can be severe
Nausea	rare	sometimes

Contact your local health care provider *right away* if you have:

- shortness of breath, rapid breathing or difficulty breathing
- chest pain
- sudden dizziness or confusion
- severe or continued vomiting
- high fever lasting more than 3 days

Contact your local health care provider if you are caring for a child who has the flu and:

- is not drinking or eating enough
- is not waking up or interacting with others
- is irritable, not wanting to play or be held



The flu and you!

It's your health – Flu season (cont'd)

Most people will recover from the flu within a week. But others (like, pregnant women and people with chronic health conditions) are more at risk for severe complications. If your symptoms don't get better, see your healthcare provider.

Stopping the flu virus - you can make a difference

You can prevent the spread of the flu in your community by following these tips:

- Get a flu shot (if you can).
- Cough and sneeze into your arm, not your hand.
- Avoid touching your eyes, nose and mouth with your hands.
- Wash your hands often with soap and water for at least 20 seconds. If hand washing is not possible, use hand sanitizer.
- Keep objects that many people touch clean (like doorknobs and TV remotes).
- If you are sick, stay at home and try to limit contact with others.
- To maintain a strong body, mind and spirit, eat well and be active every day.
- Be a role model for kids and teach them how they can stop the spread of the flu.

In Canada, flu season usually runs from November to April. The flu virus usually changes from year to year, which is why there is a new vaccine each year to protect people. It is important to get a new flu shot every year.

Who is more at risk of complications from the flu?

The following groups are not more likely to get the flu. However, they are more at risk of developing complications or requiring hospitalization if they do get sick. An annual flu shot is recommended for people in these groups.

- Adults and children with chronic health conditions (e.g. heart disease; lung disorders, diabetes and other metabolic diseases; cancer; immune compromising conditions, kidney disease and blood disorders)
- People with morbid obesity
- People who are residents of nursing homes and other chronic care facilities
- People 65 or more years of age
- All children 6 to 59 months of age
- Pregnant women
- Aboriginal Peoples
- Health care professionals and care providers working with vulnerable groups

For more information visit fightflu.ca.

Sources:

Health Canada — <http://www.hc-sc.gc.ca/hc-ps/dc-ma/influenza-eng.php#flu>

Government of Canada, Healthy Canadians — <http://healthycanadians.gc.ca/health-sante/disease-maladie/flu-grippe-eng.php>



The flu and you!

This year's flu vaccine cuts risk of illness by half – summary

Adapted from the article: "This year's flu vaccine cuts risk of illness by half", published by the Globe and Mail on Wednesday, January 16th, 2013

If you got a flu shot this year, it may have cut in half your risk of getting sick enough from flu to require medical care.

According to Dr. Danuta Skowronski, a flu expert with the British Columbia Centre for Disease Control, new data suggests that the flu vaccine provides important protection, especially if you're a high risk person. The mid-season flu vaccine effectiveness is drawn from a surveillance network of a couple of hundred family doctors and community physicians in Alberta, British Columbia, Manitoba, Ontario and Quebec. The study looked at people who seek care for influenza-like illness, to see if they were actually infected with flu and whether they had received a flu shot.

A similar effort was conducted in the US to measure the effectiveness of flu vaccine which is funded by the U.S. Centers for Disease Control (CDC). The US CDC found that this year's flu vaccine reduces the risk of requiring medical help for flu by 62 per cent overall, and by 55 per cent for influenza A viruses. Flu vaccine offers protection against two subtypes of influenza A, H3N2 and H1N1, as well as one type of influenza B virus. The U.S. data was based on a sample of patients in which flu infections was 57 per cent for influenza A and 43 per cent for influenza B. The B component of the vaccine appears to be offering better protection this year than the A, about 70 per cent. However, U.S. sample had a large proportion of B cases, that had the effect of raising the overall estimate.

The Canadian data provides a closer representation of the proportion of A versus B viruses that are causing illness this winter in this country. This flu season, H3N2 (subtype of influenza A) has been responsible for the lion's share of Canada's cases.

Source: Branswell, Helen. (2013, January 16). This year's flu vaccine cuts risk of illness by half. *The Globe and Mail, Health & Fitness/Health*, <http://theglobeandmail.com/life/health-and-fitness/health/this-years-flu-vaccine-cuts-risk-of-illness-by-half/article7438408/> (accessed on April 12, 2013).



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Independent reading questions

Instructions

Answer the questions below by accessing the following articles online or by using their summary sheets (Appendices A, B and C). Be sure to support each of your answers with evidence from the articles.

- Flu season has hospital ERs scrambling across GTA
http://thestar.com/news/gta/2013/01/15/flu_season_has_hospital_ers_scrambling_across_gta.html
- It's your health: Flu season
<http://www.hc-sc.gc.ca/hc-ps/dc-ma/influenza-eng.php#flu>
- This year's flu vaccine cuts risk of illness by half
<http://theglobeandmail.com/life/health-and-fitness/health/this-years-flu-vaccine-cuts-risk-of-illness-by-half/article7438408/>

Questions

1. How did the 2012/2013 season's outbreak of the flu compare to other years?
2. What strategies are hospitals using to control a flu outbreak?
3. How can you be infected by the flu?
4. Why does the flu vaccine change every year? Who should get one?
5. In addition to vaccination, what else can you do to prevent infection?
6. How effective was the flu vaccine during the 2012-2013 flu season? Is it still important to get a flu shot? Support your answer.
7. If a parent or guardian chooses not to vaccinate their children, what would you say to them to change their minds? Support your arguments with information from the articles.



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Independent reading questions rubric

Student name: _____

Criteria	Level 1 (50%-59%)	Level 2 (60%-69%)	Level 3 (70%-79%)	Level 4 (80%-100%)
Knowledge and understanding				
The student demonstrates knowledge and understanding of content through the use of appropriate terminology and concepts.	The student demonstrates limited knowledge and understanding of content.	The student demonstrates some knowledge and understanding of content.	The student demonstrates considerable knowledge and understanding of content.	The student demonstrates thorough knowledge and understanding of content.
Thinking and investigation				
The student uses critical thinking skills to justify and draw conclusions.	The student uses critical thinking skills to justify and draw conclusions with limited effectiveness.	The student uses critical thinking skills to justify and draw conclusions with some effectiveness.	The student uses critical thinking skills to justify and draw conclusions with considerable effectiveness.	The student uses critical thinking skills to justify and draw conclusions with a high degree of effectiveness.
Communication				
The student communicates information clearly and accurately.	The student communicates information with limited clarity and accuracy.	The student communicates information with some clarity and accuracy.	The student communicates information with considerable clarity and accuracy.	The student communicates information with a high degree of clarity and accuracy.

Comments: _____

Mark: _____