RISK FACTORS AND BLOOD-BORNE PATHOGENS

Lesson 1

6 GRADE

Learner Outcome W-6.6[1]:
Examine and evaluate the risk factors associated with exposure to blood-borne pathogens – HIV, AIDS, Hepatitis A, B, & C; e.g., sharing needles, body piercing, tattooing, helping someone who is bleeding, being sexually active.

MATERIALS:

1. MATERIALS for the blood-borne pathogens demonstration:
   - Cornstarch
   - 2 re-sealable bags
   - Water
   - 2 Glass beakers or clear containers
   - Iodine
   - Needle or safety pin
2. HANDOUT: Blood-Borne Pathogens Fact or Fiction
3. ANSWER KEY: Blood-Borne Pathogens Fact or Fiction
4. HANDOUT: Learning About HIV & AIDS and Hepatitis A/B/C

INTRODUCTION:

HIV & AIDS and Hepatitis A/B/C are preventable blood-borne pathogens. Prevention depends on knowledge of risk factors and protective measures. This lesson provides students with an opportunity to define and understand blood-borne pathogens, therefore providing students with tools and knowledge to reduce risks of contracting HIV & AIDS or Hepatitis A/B/C.

APPROACHES/STRATEGIES:

NOTES:

A. Ground Rules

(5-10 min)

Ensure ground rules are established before beginning this lesson. For classes that have already established ground rules, quickly reviewing them can promote a successful lesson

B. Introduction to Blood-Borne Pathogens

(15in)

Students define "communicable disease" and understand the concept of transmission of a disease.

1. Ask students to brainstorm a list of pathogens. Write down each suggestion on the board or an overhead. Ensure that HIV & AIDS and Hepatitis A/B/C are on the list.

2. Explain to students that some diseases are communicable – diseases that are passed from one person to another and some are non-communicable – diseases that happen inside a person that can't be passed onto another person except genetically or via the introduction of environmental hazards (i.e., second hand smoke).

3. Demonstrate the transmission of a communicable disease using the following procedure:
   - Place cornstarch inside two re-sealable bags and seal the top. Inform students that cornstarch represents the blood inside our bodies and the plastic bags represent the skin that protects our bodies.
   - Use a needle to make several holes in one of the bags. The holes represent parts of our bodies that could allow a virus through, such as cuts, piercings, or mucus membranes (such as those found in our genital area, back of throat, eyes, and in nose).
   - Place each bag into a glass beaker filled with water, ensuring the top of the bag remains out of the water to prevent leakage. Inform students that the water represents the environment outside the body.
   - Put several drops of iodine into the water of each beaker. Inform students that the iodine represents a virus causing HIV & AIDS or Hepatitis A/B/C.
   - Remove the bags from the solution. The cornstarch inside the bag with the holes in it will have changed color. Inform students that this color change represents the introduction of a disease such as HIV & AIDS or Hepatitis A/B/C to the bloodstream. Diseases passed through blood are known as blood-borne pathogens, and are communicable diseases.

4. Looking back at the list from step one, circle diseases that are communicable.

5. Debrief this activity using the following questions:

Which of the communicable diseases we identified can cause serious health problems?

Explain to students that a mucus membrane is a part of our body that is moist and has openings to the outside of our body, e.g. back of throat, anus, eyes, and nose.

- HIV & AIDS
- Hepatitis A/B/C

Why are some communicable diseases more serious than others?

- They can cause severe health problems, even death

What emotions do people feel toward serious communicable diseases such as HIV & AIDS and Hepatitis A/B/C?

- Fear
- Anger
- Compassion

C. Blood-Borne Pathogens Fact or Fiction

(15-20 min)

Students determine how much they know about blood-borne pathogens, and identify where their knowledge gaps are.

1. Distribute the handout Blood-Borne Pathogens Fact or Fiction.

2. Have students complete this handout independently.

3. Using the answer key, review each statement while students correct their handout.

4. Debrief this activity using the following questions:

Some students may have close experience with blood-borne pathogens. It is important to be sensitive to any potentially harmful comments by other students.

How are blood-borne pathogens passed from one person to another?

- Blood-borne pathogens are passed from one person to another through an exchange of blood or body fluid including semen and vaginal secretions, and through breast milk (HIV only).
- Blood-borne pathogens can be passed through contaminated food or drinks, sharing needles, body piercing and tattooing equipment, helping someone who is bleeding without using gloves, sexual intercourse, and from an infected mother to her baby.

What diseases are blood-borne?

- HIV & AIDS and Hepatitis A, B, and C are blood-borne pathogens.

What is the difference between HIV (Human Immunodeficiency Virus) and AIDS (Acquired Immunodeficiency Syndrome)?[2]

- HIV is a virus that can make you sick and is the virus that causes AIDS.
- A person can be infected with HIV and not have AIDS.

- HIV weakens the immune system, your body's built-in defense against disease and illness.
- A person can have HIV without knowing it and may not look or feel sick but can still pass the virus on to other people.
- It can take many years for the virus to multiply and cause serious damage to the immune system.
- Without treatment, HIV can make the immune system too weak to fight off serious diseases and a person may become very sick with life-threatening infections. This is the most serious stage of HIV, called AIDS.

What is the difference between Hepatitis A, B and C?

- Hepatitis in general refers to any inflammation of the liver. It can have a variety of causes, including viruses, medicines, alcohol, chemicals and other toxins. Hepatitis A, B, and C are all viruses but are very different from each other.[3]
- Hepatitis A is generally spread through oral contact with the feces of a person with hepatitis A. It can be in food or water. Sometimes, people don't wash their hands after going to the bathroom and that is how the hepatitis A virus gets into food or water. You can get a vaccination to prevent getting Hepatitis A.[3]
- Hepatitis B is spread by contact with infected blood and body fluids. There are medicines to help control the virus, and you can get a vaccination to prevent getting Hepatitis B.[3]
- Hepatitis C is passed by blood-to-blood contact. Hepatitis C can be passed through sharing needles, body piercing and tattooing equipment, helping someone who is bleeding without using gloves, and unprotected sexual intercourse. There is no vaccine to protect against Hepatitis C.[4]

What can a person do to prevent the spread of blood-borne pathogens?

- Practice abstinence (not having sexual intercourse or sexual contact)
- Use only clean and new needles or tattooing/piercing equipment
- Avoid touching someone who is bleeding without wearing latex gloves
- Do not share toothbrushes, razors, or nail clippers with someone who has Hepatitis C.

For more information on hepatitis vaccinations please visit Alberta Health and Wellness http://www.health.alberta.ca/health-info/imm-hepatitis-B.html

Download the Public Health Agency of Canada's *Hepatitis B: Get the Facts:* http://www.phac-aspc.gc.ca/hcai-iamss/bbp-pts/hepatitis/pdf/hepb-eng.pdf

D. Parent Interview[5]

(5 min today, 30 min homework, 5-10 min next class)

Students discuss blood-borne pathogens with a parent or guardian

1. Distribute the handout: Learning About HIV & AIDS and Hepatitis A/B/C for students to complete as a homework assignment.

2. Explain that students can complete this interview with a parent or guardian.

3. Dedicate time to debrief this activity during the next lesson.

QUESTION BOX: (10 min)

Introduce the question box. You could have students fill out questions every lesson, or have students begin to think about questions that they might ask next lesson.

TAKE IT HOME:

Students complete the handout: Learning About HIV & AIDS and Hepatitis A/B/C with a parent or guardian.

Keep in mind that all students do not live in a "traditional" family nor do they have equal opportunities for open discussion within their "family." Although it is best for students to complete this assignment with a supportive parent or guardian, it may not be possible. Be sensitive to the needs of your students.

SELF REFLECTION:

During the lesson, were:

- Ground rules being followed?
- Good practices established regarding group work and discussion?

What will you change for future classes with this group?

What will you change for future use of this lesson?

STUDENT ASSESSMENT:

During the lesson, did students:

Knowledge:
- Define communicable/blood-borne pathogens?
- Prove understanding about the concept of disease transmission?
- Dispel personal misunderstandings about blood-borne pathogens?

Skills:
- Identify ways to prevent the transmission of blood-borne pathogens?

Attitudes:
- Acknowledge the implications of having a blood-borne pathogen?

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[1] Alberta Education. (2002). *Health and life skills guide to implementation: Kindergarten to grade 9*. Retrieved from http://education.alberta.ca/media/352993/pos.pdf

[2] Canadian AIDS Treatment Information Exchange (CATIE). (2010). *HIV & AIDS: Basic facts*. Retrieved from http://www.catie.ca/eng/PreventingHIV/fact-sheets/HIV-basics.shtml

[3] Canadian AIDS Treatment Information Exchange (CATIE). *Hep A, B, & C*. Retrieved from http://www.hepcinfo.ca/en/simple/what-hep-c/hep-b-c

[4] Canadian AIDS Treatment Information Exchange (CATIE). *What is hepatitis c?* Retrieved from http://www.hepcinfo.ca/en/detail/what-hepatitis-c?lang=en&level=i

[5] Canadian Federation for Sexual Health. (2005). *Beyond the Basics: A sourcebook on sexuality and reproductive health education.* Ottawa: Author