



National Education Association Health Information Network Lesson Plans for Sexual Health and Vaccine Education

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Lesson Plan: The Matrix - A Vaccination Research Project	The purpose of this lesson is to teach students health and science topics using a relevant and meaningful medium: diseases and vaccines. This lesson involves a motivating opening activity that simulates how easily diseases spread and the importance of vaccinations. Students explore vaccines through independent research and partner interaction.	5-8
Lesson Plan: Learning about our Sexual Health	In this lesson, students will use a Venn Diagram to compare and contrast sexually transmitted infections (STIs).	5-8
Lesson Plan: Vaccination Investigation	Through a cooperative learning activity called an Expert Jigsaw, students will develop an understanding and awareness of six types of vaccines. Students will gain knowledge about each vaccine and the disease each vaccine prevents. This knowledge will teach students why vaccines are an important tool for maintaining a healthy lifestyle for themselves, their families, and the community.	9-12
Lesson Plan: Looking Back to Look Ahead – The History of Disease Prevention	The purpose of this lesson is to provide students with an opportunity to learn about vaccines and disease prevention from a historical point of view. Students will learn about vaccines by researching historical time periods, creating a time line, and presenting their findings to other students.	9-12
Lesson Plan: Setting the Record Straight – Clarifying Information about Sexual Health	The purpose of this lesson is to promote teen sexual health through an interactive activity. This lesson is designed to clarify knowledge and boost the comfort level with the topic of sexually transmitted infections (STIs).	9-12
Lesson Plan - Sharing What We Know about Sexual Health	The purpose of this lesson is to promote teen sexual health and the prevention of sexually transmitted infections (STIs) by educating students through interactive activities designed to build knowledge and open communication about this topic. This lesson will encourage students to be accurate sources of information for their peers and responsible role models by protecting themselves and encouraging others to do the same.	9-12

Lesson Plan: The Matrix - A Vaccination Research Project

Overview and Purpose: The purpose of this lesson is to teach students health and science topics using a relevant and meaningful medium: diseases and vaccines. This lesson involves a motivating opening activity that simulates how easily diseases spread and the importance of vaccinations. Students explore vaccines through independent research and partner interaction.

Grade Level: Grades 5-8

Estimated Time Allotment: 4 Class Periods

(based on 50-minute class periods, with 45 minutes of instructional time for this lesson; specific durations of activities are provided within the Lesson Procedures section)

Curriculum Focus: Science and Health

Learning Objectives

The student will be able to:

- describe how disease spreads
- explain how vaccines work
- list types of vaccines
- discuss the benefits of vaccination
- describe the diseases that various vaccines prevent
- summarize when vaccination should occur
- use print and online resources to collect and analyze information
- determine relevant and irrelevant information
- summarize and organize information
- write about their research

Standards Addressed

Health

American Alliance for Health, Physical Education, Recreation and Dance (AAHPERD) and American Association for Health Education (AAHE), National Health Education Standards

Health Education Standard 1: Students will comprehend concepts related to health promotion and disease prevention

1.5.4 (3-5) Describe ways to prevent common childhood injuries and health problems

1.8.5. (6-8) Describe ways to reduce or prevent injuries and other adolescent health problems

Health Education Standard 3: Students will demonstrate the ability to access valid information and products and services to

3.5.2 (3-5) Locate resources from home, school and community that provide valid health information

3.8.2. (6-8) Access valid health information from home, school, and community

Lesson Plan: The Matrix - A Vaccination Research Project

Health Education Standard 8: Students will demonstrate the ability to advocate for personal, family and community health

8.5.1 (3-5) Express opinions and give accurate information about health issues

Mid-Continent Research for Education and Learning (McREL) Standards, Curriculum Standards for Health

Content Standard 7: Knows how to maintain and promote personal health

Level III (Grades 6-8) Benchmark 2. Knows how positive health practices and appropriate health care can help to reduce health risks (e.g., good personal hygiene, health screenings, self-examinations)

Content Standard 8: Knows essential concepts about the prevention and control of disease

Level II (Grades 3-5) Benchmark 1. Knows ways in which a person can prevent or reduce the risk of disease and disability

Science

National Science Education Standards, Science Content Standards

Content Standard C (Life Science): As a result of their activities in grades 5-8, all students should develop understanding of the structure and function in living systems

Curriculum Integrations

Reading

Reading and Language Arts, International Reading Association and National Council of Teachers of English Standards, Standards for the English Language Arts

3: Students apply a wide range of strategies to comprehend, interpret, evaluate, and appreciate texts. They draw on their prior experience, their interactions with other readers and writers, their knowledge of word meaning and of other texts, their word identification strategies, and their understanding of textual features (e.g., sound-letter correspondence, sentence structure, context, graphics)

4: Students adjust their use of spoken, written, and visual language (e.g., conventions, style, vocabulary) to communicate effectively with a variety of audiences and for different purposes

5: Students employ a wide range of strategies as they write and use different writing process elements appropriately to communicate with different audiences for a variety of purposes

6: Students apply knowledge of language structure, language conventions (e.g., spelling and punctuation), media techniques, figurative language, and genre to create, critique, and discuss print and nonprint texts

7: Students conduct research on issues and interests by generating ideas and questions, and by posing problems. They gather, evaluate, and synthesize data from a variety of sources (e.g., print and nonprint texts, artifacts, people) to communicate their discoveries in ways that suit their purpose and audience

8: Students use a variety of technological and information resources (e.g., libraries, databases, computer networks, video) to gather and synthesize information and to create and communicate knowledge

11: Students participate as knowledgeable, reflective, creative, and critical members of a variety of literacy communities

12: Students use spoken, written, and visual language to accomplish their own purposes (e.g., for learning, enjoyment, persuasion, and the exchange of information)

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Social Studies

Social Studies, Center for Civic Education, National Standards for Civics and Government

Content Standard K-12, V: What are the Roles of the Citizen in American Democracy? What are important responsibilities of Americans?

Social Studies, National Center for History in Schools

Historical Thinking Content Standard 3: Historical Analysis and Interpretation

C. Analyze cause-and-effect relationships and multiple causation, including the importance of the individual and the influence of ideas

Lesson Procedures for Teacher

Before teaching the Lesson

Teacher Background: Content Background and Resources, Lesson Vocabulary, Instructional Strategy Overview, Preventable Disease List, The Matrix samples and The Important Book about Vaccines sample. (Teacher Resources 1 - 9)

Teacher Preparation:

Materials and Planning Notes

Prepare to have the students conduct Internet research. Bookmark websites for students to research and test websites and links to be sure that the sites are not blocked or URLs have not changed. (Teacher Resource 1)

Prepare Spread of Disease Simulation Experiment: brown paper bags filled with Hot Tamales for each student, one brown paper bag filled with a mixture of red candy (Hot Tamales and another small red candy)

Prepare copies of The Matrix (Student Resource 1), one per student and The Important Book (Student Resource 2), one per student

Additional Materials: computers with Internet access, paper bags for each student (12 oz. brown or another dark color will work best), Hot Tamales Candy (enough to place approximately 2 cups in each bag), bag of another kind of small red candy such as Tic Tacs, Red Hots, or regular M&Ms with the red M&Ms separated out (you will need enough to place a handful of this kind of candy into ONE of the bags), The Important Book by Margaret Wise Brown

Please note: Prior to starting the lesson, please check with school policy to determine if students are permitted to eat the leftover candy before giving any to the students.

During teaching of the Lesson

Lesson Plan: The Matrix - A Vaccination Research Project

Opening Activity – Spread of Disease Simulation

45 minutes

1. Introduce the topic of disease by leading a small group discussion. Ask the students to imagine that in a group the size of their class, one person has a contagious disease such as chickenpox, polio, or measles. Ask students to make predictions about the spread of the disease. (If this disease is spread through contact, how many people in the group may get the disease?)
2. Explain to students that they will be participating in a simulation of the spread of an infectious disease. Explain the experiment: each student will receive a brown paper bag. That bag represents a person (be sure to refer to the bag as the sick or infected person -- not the student -- this will help to keep the context of the experiment appropriate). Inside of the bag there are some items (candy), which represent the “bag’s” health. Once students receive a bag, they should cover the top and not discuss the contents of the “bag’s” health with their classmates.
3. Tell students that they will have five minutes to walk around and exchange a few of their paper bag’s contents with their classmates. They must get from at least three people and give to at least three people. This should all happen without any discussion about the contents of the bags.
4. Distribute the paper bags (making sure one of the students gets the paper bag with the mixture) and give the students five minutes to exchange.
5. Ask the students to return to their seats. Before they look in the bags, have a brief discussion related to the spread of disease. Ask students if they think they would always know if a person has chickenpox or measles just by looking at them. Some students will say, “Yes, because they have a rash.” This is a good opportunity to clarify that it is likely with some diseases for people to be contagious weeks before the symptoms show. Ask students how they think that may affect a person’s ability to defend himself or herself against the spread of diseases.
6. The students will now reveal and discuss the contents of their bags.
 - Explain to students that before they began exchanging the contents of their bags, one person had a bag that was contagious with an infectious disease. *Sample Conversation with Students:* “Everyone else in the class had a healthy bag with ALL Hot Tamales candy from the start. One person had a bag with the virus mixed in. The virus was the Red Hots (or other chosen red candy). Just as with the real world, that person may or may not have known the contents of their bag, but you were asked not to discuss your bag’s health. Each person having a bag containing Red Hots (or other chosen red candy) now has a bag with the disease.”

Lesson Plan: The Matrix - A Vaccination Research Project

- How many bags in the class are infected? Have students think about the implications of this experiment (some people who exchanged with the infected bag got Red Hots Disease, some did not).
 - Have students discuss why they weren't allowed to discuss their bag's "health." (In the real world, sometimes people choose not to share that information, and there are laws in place that protect that choice. Sometimes people really don't know they are infected.) How do they feel about how quickly the disease spread with "casual contact"? What did they learn from this simulation? What did it reveal to them about precautions toward certain diseases. What can they do to protect themselves?
7. Connect the implications of this experiment with the upcoming Learning Activity. Explain to students that the most effective way to prevent many diseases is through vaccines. Ask students if they know what vaccines are and how they work. Supplement the student's background knowledge by adding to the discussion. (Teacher Resource 1) Place a Preventable Diseases List on the board, chart, or overhead projector (Teacher Resource 4). Explain to students that they will select one of these diseases and research its vaccine using The Matrix to collect information.

Learning Activity – Matrix Research Project

105 minutes

1. Explain The Matrix research method to the students using the completed sample OR model the method using the blank Matrix (Teacher Resource 5 or 6).
2. Explain the procedure for the research project to the students (write the following steps on the board or chart paper).
 - a. With teacher's help, student will choose a vaccine to research from the displayed Preventable Disease List (Teacher Resource 4). Teacher will facilitate this process to make sure all vaccines are covered. Students will pick a disease from the list, and the first step of their research is to determine which vaccine prevents the disease.
 - b. Complete Matrix to research the vaccine using three sources; one source must be the CDC (U.S. Department of Health and Human Services, Centers for Disease Control and Prevention). The other sources can be print materials provided by the teacher or the Internet (bookmarked websites or list of websites provided by the teacher) (Teacher Resource 1). Record the sources on the back of the Matrix (Student Resource 1) to use for the bibliography.
 - c. After the Matrix is complete, students will write a five paragraph research essay:
 - i. Introduction Paragraph
 - ii. Supporting Detail Paragraph One (from column one of The Matrix)
 - iii. Supporting Detail Paragraph Two (from column two of The Matrix)

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- iv. Supporting Detail Paragraph Three (from column three of The Matrix)
 - v. Closing Paragraph
 - vi. Bibliography
3. Refer to the Preventable Diseases List (Teacher Resource 4) from the opening activity. Begin to facilitate the process of students choosing a disease.
 4. Students begin research and write essays.
 5. Optional: Before beginning the research, review summarizing skills, specifics of writing essays and bibliographies, working knowledge of plagiarism, and Internet safety skills.
(Please Note: This lesson plan was written based on the assumption that these topics would not be newly introduced in this lesson – for additional web resources for teaching any of these topics, please refer to the Teacher Resource 1)

Closing Activity – The Important Book Strategy

30 minutes

1. Read The Important Book by Margaret Wise Brown to the class.
2. Discuss the text structure, pattern, and writing style used by the author.
3. Explain how this text structure is helpful to summarize an important topic. The students will be using it to summarize important information they have learned about vaccines.
4. To explain the process, show students The Important Book About Vaccines sample (Teacher Resource 7 or 8).
5. Have students exchange research papers with someone who researched a different vaccine. (It is best if this takes place after the final drafts of the students' essays are completed).
6. Have students complete The Important Book About Vaccines sheet (Student Resource 2) based on the research paper they read. Provide time for students to ask the author of the paper to clarify any information.
7. Go around the room and have each student read their The Important Thing about Vaccines.
8. Collect the summaries and create a class book. Display the book in the class.

Note: The Important Book by Margaret Wise Brown is usually found in most book stores in the children's section as well as for check-out from your school or local library. If you are unable to obtain a copy of the book, use this alternative closing activity.

Alternative Closing Activity – Sum It Up

1. Have students exchange research papers with someone who researched a different vaccine. (It is best if this takes place after the final drafts of the students' essays are completed).

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2. Have students read their classmates research paper. Using a note card, have students write a top five summary based on the research paper they read. Provide time for students to ask the author of the paper to clarify any information. On the index card, the students list the top five most important pieces of information about the vaccine from the paper they read.
3. Go around the room and have each student share his or her summary.

Supplemental Materials

Resources to accompany this lesson plan have been created and are provided after this section. This lesson plan contains the following supplemental materials (as referenced throughout this section).

Student Resources

Student Resource 1: The Matrix

Student Resource 2: The Important Book About Vaccines

Teacher Resources

Teacher Resource 1: Content Background and Resources for Vaccine Education

Teacher Resource 2: Lesson Vocabulary

Teacher Resource 3: Instructional Strategy Overview

Teacher Resource 4: Preventable Disease List

Teacher Resource 5: The Matrix (completed sample)

Teacher Resource 6: The Matrix (blank)

Teacher Resource 7: The Important Book About Vaccines (completed sample)

Teacher Resource 8: The Important Book About Vaccines (blank)

Teacher Resource 9: Reference List

Modifications

- Have students work with partners or small groups to complete research. With groups of five, each student could write one section of the paper.
- Reduce the project to completing only The Matrix (not writing the paper).
- Have students turn the research paper into a presentation.
- Teach another subject using instructional strategies The Matrix or The Important Book

Assessment

- Assessment of Learning Process: Anecdotally observe students during whole group discussions and independent work.

Lesson Plan: The Matrix - A Vaccination Research Project

- Assessment of Content Knowledge: Evaluate students' written work products from this lesson (Research Essay and The Important Book About Vaccines).
- If appropriate, create a rubric for evaluating a research paper (if using a rubric, it is helpful to review it with the students before they begin to write their papers).

After teaching the Lesson

Extension and Additional Activities (Take Home Component)

- Hold a class debate about whether certain vaccinations should be required.
- Make a connection between the invention of a vaccine to prevent a disease and the Scientific Method. When scientists discover vaccines, they are following the steps of the Scientific Method. Conduct a class discussion relating the Scientific Method and the invention of vaccines.
 1. Observation and description of a phenomenon or group of phenomena
 2. Formulation of a hypothesis to explain the phenomena.
 3. Use of the hypothesis to predict the existence of other phenomena
 4. Performance of experimental tests of the predictions
- Investigate the role of the U.S. Food and Drug Administration (FDA) in approving vaccines. Most recently (Sept. 12, 2008) the FDA announced an approval of expanded uses for Gardasil to include preventing certain vaginal cancers caused by certain types of Human Papillomavirus (HPV).
- Find out when National Immunization Week is honored and plan a unit for that time
- Invite the school nurse to discuss common diseases and how they are spread. Have the school nurse discuss precautions to avoid diseases.
- Make a "class book" with Important Book handout, share with other classes and parents. Take turns taking the book home and sharing it. Have students share research papers and provide Important Book handouts for families to complete at home.

Lesson At – A– Glance

Opening: Disease Spread Simulation	45 minutes
Learning Activity: The Matrix Research Project	105 minutes
Closing: The Important Book Strategy	30 minutes

The Matrix - A Vaccination Research Project
Student Resource 1: The Matrix

Student Name: _____

Research Data Chart

We are Learning About Vaccinations...

VACCINE: _____


	What does it prevent?	How does it work?	When do you get it?	Why do you get it?
Source 1 (CDC)				
Source 2				
Source 3				


The Matrix - A Vaccination Research Project

Student Resource 2: The Important Book About Vaccines


Student Name:

Writing a Summary of Your Learning


 The important thing about _____
is _____
_____.

 _____


_____.

 _____

_____.

 _____

_____.

 The important thing about _____ is

_____.

The Matrix - A Vaccination Research Project

Teacher Resource 1: Content Background and Resources

“Disease prevention is the key to public health. It is always better to prevent a disease than to treat it. Vaccines prevent disease in the people who receive them and protect those who come into contact with unvaccinated individuals. Vaccines help prevent infectious diseases and save lives. Vaccines are responsible for the control of many infectious diseases that were once common in this country, including polio, measles, diphtheria, pertussis (whooping cough), rubella (German measles), mumps, tetanus, and Haemophilus influenzae type b (Hib).”

“Parents are constantly concerned about the health and safety of their children and take many steps to protect them. These steps range from child-proof door latches to child safety seats. In the same way, vaccines work to protect infants, children, and adults from illnesses and death caused by infectious diseases. While the US currently has record, or near record, low cases of vaccine-preventable diseases, the viruses and bacteria that cause them still exist. Even diseases that have been eliminated in this country, such as polio, are only a plane ride away. Polio, and other infectious diseases, can be passed on to people who are not protected by vaccines.”

“Vaccine-preventable diseases have a costly impact, resulting in doctor's visits, hospitalizations, and premature deaths. Sick children can also cause parents to lose time from work.”

*Statement from the US Department of Health and Human Services
Centers for Disease Control and Prevention (CDC)*

What is a vaccine?

A vaccine is made from the antigen—either a bacteria or a virus—that causes the disease. Some vaccines use live but weakened versions of the antigen. Some are made from “killed” antigens, and others are made from parts of the antigen or one that closely resembles the targeted bacteria or virus. In any form, a vaccine does not contain enough antigens to cause the disease. It has just enough to trigger the body’s immune system to produce antibodies against that disease. In most cases, these antibodies remain active and protective against the disease for a person’s lifetime. This protection is called immunity. In some cases, a vaccine requires booster shots, doses given at regular intervals.

What are some common vaccines? When do children typically get them?

Explain that usually, children receive several vaccinations during the first 10 years of their lives, most of them before the age of one: polio, MMR (measles, mumps, rubella), DTaP (diphtheria, tetanus, pertussis), Hepatitis B, Varicella (chickenpox). CDC and the American Academy of Pediatrics (AAP) recommend that pre-teens get several vaccines at their 11 or 12-year-old check-up: tetanus-diphtheria-acellular pertussis vaccine (Tdap), Meningococcal conjugate vaccine (MCV4), and human papillomavirus (HPV) vaccine for girls.

The Matrix - A Vaccination Research Project

Teacher Resource 1: Content Background and Resources

How do vaccines work? What does a vaccine do? How do vaccines prevent disease?

A weakened form of the disease germ is injected into the body. The body makes antibodies to fight these invaders. If and when the actual disease germs attack the body, the antibodies will still be there to destroy them.

What is an immune system? What is immunity?

Explain that the immune system is the body's method of protecting itself from foreign substances that invade the body. Vaccines work with our immune system to protect against diseases. A vaccine helps your body create antibodies, or cells that fight off antigens, and foreign substances like bacteria or viruses. Sometimes your body creates antibodies by itself, but not enough to fight a serious disease like polio. Immunity to a disease is achieved through the presence of antibodies to that disease in a person's system. Antibodies are proteins produced by the body to neutralize or destroy toxins or disease-carrying organisms. Antibodies are disease-specific. For example, measles antibody will protect a person who is exposed to measles disease, but will have no effect if he or she is exposed to mumps.

There are two types of immunity: active and passive. Active immunity results when exposure to a disease organism triggers the immune system to produce antibodies to that disease. Exposure to the disease organism can occur through infection with the actual disease (resulting in natural immunity), or introduction of a killed or weakened form of the disease organism through vaccination (vaccine-induced immunity). Either way, if an immune person comes into contact with that disease in the future, their immune system will recognize it and immediately produce the antibodies needed to fight it. Active immunity is long-lasting, and sometimes life-long. Passive immunity is provided when a person is given antibodies to a disease rather than producing them through his or her own immune system. A newborn baby acquires passive immunity from its mother through the placenta. A person can also get passive immunity through antibody-containing blood products such as immune globulin, which may be given when immediate protection from a specific disease is needed. This is the major advantage to passive immunity; protection is immediate, whereas active immunity takes time (usually several weeks) to develop. However, passive immunity lasts only for a few weeks or months. Only active immunity is long-lasting.

What are the potential side effects of vaccinations?

While vaccines are very safe, like any medicine they do sometimes cause reactions. Mostly, these are mild "local" reactions (soreness or redness where the shot is given) or a low-grade fever. They may last a day or two and then go away. Sometimes more serious reactions are associated with vaccines. These are much less common. Some have been reported after vaccination but are so rare that it is impossible to tell if they were caused by the vaccine or would have happened anyway. There is a very small risk (estimated at around one in a million) that any vaccine could trigger a severe reaction.

The Matrix - A Vaccination Research Project

Teacher Resource 1: Content Background and Resources

Why should vaccinations be required?

Immunizing individual children also helps to protect the health of our community, especially those people who are not immunized. People who are not immunized include those who are too young to be vaccinated (e.g., children less than a year old cannot receive the measles vaccine but can be infected by the measles virus), those who cannot be vaccinated for medical reasons (e.g., children with leukemia), and those who cannot make an adequate response to vaccination. Also protected, therefore, are people who received a vaccine, but who have not developed immunity. In addition, people who are sick will be less likely to be exposed to disease germs that can be passed around by unvaccinated children. Immunization also slows down or stops disease outbreaks.

To explore the concept of community disease prevention, Garrett Hardin's classic essay *The Tragedy of the Commons* describes the challenges presented when societal interest conflicts with the individual's interest. Hardin notes: *"...a community free of an infectious disease because of a high vaccination rate can be viewed as a common. The very existence of this common leads to tension between the best interests of the individual and those of the community. Increased immunization rates result in significantly decreased risk for disease. Although no remaining unimmunized individual can be said to be free of risk from the infectious disease, the herd effect generated from high immunization rates significantly reduces the risk for disease for those individuals. Additional benefit is conferred on the unimmunized person because avoidance of the vaccine avoids the risk for any adverse reactions associated with the vaccine. As disease rates drop, the risks associated with the vaccine come even more to the fore, providing further incentive to avoid immunization. Thus, when an individual in this common chooses to go unimmunized, it only minimally increases the risk of illness for that individual, while conferring on that person the benefit of avoiding the risk of vaccine induced side effects. At the same time, however, this action weakens the herd effect protection for the entire community. As more and more individuals choose to do what is in their 'best' individual interest, the common eventually fails as herd immunity disappears and disease outbreaks occur. To avoid this 'tragedy of the commons', legal requirements have been imposed by communities (in recent times, by states) to mandate particular vaccinations."*

The Matrix - A Vaccination Research Project

Teacher Resource 1: Content Background and Resources

WEB RESOURCES

Content Background

www.cdc.gov/vaccines

www.cdc.gov/vaccines/vpd-vac/default.htm

<http://kidshealth.org/parent/general/body/vaccine.html>

www.vaccineinformation.org

www.neahin.org

www.who.org/

www.cdc.gov/vaccines/recs/schedules/default.htm

www.cdc.gov/vaccines/recs/schedules/child-schedule.htm#printable

www.cdc.gov/vaccines/pubs/vis/default.htm

www.cdc.gov/vaccines/recs/schedules/downloads/child/2008/08_7-18yrs_schedule_pr.pdf

www.cancer.org

Lesson Plans and Resources on Research Writing/Writing a Bibliography

www.readwritethink.org/lessons/lesson_view.asp?id=306

www.readwritethink.org/lessons/lesson_view.asp?id=419

www.teachersnetwork.org/dcs/cyberenglish/researchlp.htm

www.literacymatters.org/lessons/onlineresearch.htm

www.readwritethink.org/lessons/lesson_view.asp?id=158

Lesson Plans and Resources on Plagiarism

www.indiana.edu/~wts/wts/plagiarism.html

www.readwritethink.org/lessons/lesson_view.asp?id=1062

www.turnitin.com/research_site/e_home.html

Lesson Plans and Resources on Internet Safety

<http://bnetsavvy.org/>

www.netsmartz.org/educators.htm

www.media-awareness.ca/english/games/index.cfm

<http://ilearn.isafe.org/>

www.cybersmartcurriculum.org/home

The Matrix - A Vaccination Research Project

Teacher Resource 1: Content Background and Resources

WEB RESOURCES

Rubrics for Research Writing

<http://rubistar.4teachers.org/index.php>

www.Turnitin.com

www.teach-nology.com/web_tools/rubrics/general

www.readwritethink.org/lessons/lesson_view.asp?id=306

www.rubrics4teachers.com/archive.php

Resources for Bookmarking Websites for Students on the Internet

(How to create “bookmarks” of websites for the students’ Internet research)

<http://iKeepBookmarks.com>

<http://pagekeeper.teachingmatters.org/home>

<http://teachingtoday.glencoe.com/howtoarticles/social-bookmarking>

Suggested Websites to Bookmark for this Activity (Research Matrix for Vaccines)

<http://www.cdc.gov/vaccines/vpd-vac/default.htm>

<http://www.nih.gov>

<http://www.webmd.com>

<http://www.immunize.org/>

www.fda.gov/consumer/updates/kidsvaccines073107.html

<http://www.fda.gov/oc/opacom/kids/html/vaccines.htm>

<http://en.wikipedia.org/wiki/Vaccine>

<http://www.vaccineprotection.com/?fa=home>

http://www.who.int/ith/vaccines/2007_routine_use/en/index.html

The Matrix - A Vaccination Research Project

Teacher Resource 2: Lesson Vocabulary

antibody

Definition: A substance that fights a disease by protecting the body from a virus or bacteria.

Context: Vaccines cause the body to develop antibodies to fight a disease.

antigen

Definition: A substance such as bacteria or a virus that invades the body and stimulates the production of an antibody.

Context: Recognized as a threat by the immune system, an antigen, such as the streptococcus bacteria, triggers the production of an antibody.

bacteria

Definition: Simple one-celled organisms classified as prokaryotes.

Context: Although many bacteria live in the human body without causing harm, some cause tuberculosis, typhoid fever, whooping cough, and other diseases.

contagious

Definition: Capable of being transmitted by bodily contact with an infected person or object

Context: Measles is highly contagious, and infected people are usually contagious from about four days before their rash starts to four days afterwards.

endemic

Definition: The continual, low-level presence of disease in a community

Context: Cutaneous diphtheria is endemic in tropical countries but unusual in the United Kingdom.

herd immunity

Definition: Having a large percentage of the population vaccinated in order to prevent the spread of certain infectious diseases. Also known as community immunity.

Context: Herd immunity benefits individuals not vaccinated (such as newborns and those with chronic illnesses) because the disease has little opportunity to spread within the community.

immunization

Definition: The process of protecting the body against disease using vaccines or serums.

Context: Most children begin their immunization schedule as babies and continue before they begin elementary and middle school.

The Matrix - A Vaccination Research Project

Teacher Resource 2: Lesson Vocabulary

incubation period

Definition: The time from contact with infectious agents (bacteria or viruses) to onset of disease.

Context: The typical incubation period for measles from exposure to rash onset is approximately 10 days.

infectious

Definition: Likely to spread to others. Capable of spreading disease. Also known as communicable.

Context: Measles is an infectious disease.

vaccine

Definition: A substance that protects a body against a disease by causing the body's immune system to produce antibodies.

Context: Some vaccines provide lifelong protection against infection, while others require several doses given at regular intervals.

virus

Definition: An infectious agent that lives in a cell of another living thing.

Context: Viruses are a major cause of disease and can infect human beings with measles, influenza, and the common cold.

The Matrix - A Vaccination Research Project

Teacher Resource 3: Instructional Strategy Overview

Research Writing Matrix - Data Chart

A Matrix is a data chart students can use to collect information on an assigned research topic. This organizational tool will help students conduct research without plagiarizing. To use this strategy, introduce the research area the students will be covering and then have the students brainstorm categories of what they may want to learn about this subject. To create the matrix, students select three research categories from the brainstormed list. For each research category the student must find three sources. As they review the research from each source students take notes in the box space provided for that source. They record a few phrases that will help them remember the information. The space is too small to copy the whole passage. They can record the bibliographical information from each source on the back of the Matrix. After the chart is complete, students can begin to write their paper. Each column on the data chart can be turned into a paragraph. The students have to add the introductory and closing paragraphs, and then they will have a rough draft for a five-paragraph research essay. The Matrix is flexible; the teacher can choose the research categories or the sources. The Matrix can also be used with more than three categories or sources.

SAMPLE SCENARIO

Class is studying: Severe Weather in the U.S.

Categories Brainstormed: What is it? When does it occur? How is it predicted? Where does it occur? What is the possible damage? What can be done to prepare? What does it look like?

TOPIC: Tornadoes

	When is tornado season?	Where are tornadoes common?	What are tornadoes?
Source 1			
Source 2			
Source 3			

The Matrix - A Vaccination Research Project

Teacher Resource 4: Preventable Disease List

Anthrax
Cervical Cancer
Diphtheria
Hepatitis A
Hepatitis B
Haemophilus influenzae type b (Hib)
Human Papillomavirus (HPV)
Influenza (Flu)
Japanese Encephalitis (JE)
Lyme Disease
Measles
Meningococcal
Monkeypox
Mumps
Pertussis (Whooping Cough)
Pneumococcal
Poliomyelitis (Polio)
Rabies
Rotavirus
Rubella (German Measles)
Shingles (Herpes Zoster)
Smallpox
Tetanus (Lockjaw)
Tuberculosis
Typhoid Fever
Varicella (Chickenpox)
Yellow Fever

The Matrix - A Vaccination Research Project
Teacher Resource 5: The Matrix

Overhead Transparency
Research Data Chart
SAMPLE

We are Learning About Vaccinations...

VACCINE: *Polio Vaccine*

	What does it prevent	How does it work?	When do you get it?	Why do you get it?
Source 1 (CDC)	<i>Polio</i> <i>-highly contagious</i> <i>-spread through the air</i>	<i>- a weak form of the bacteria that causes the polio virus is injected into your body</i> <i>- your body produces antibodies to fight the disease</i> <i>- If and when you are exposed to the real bacteria, those antibodies are there to destroy the disease</i>	<i>4 doses as a child</i> <i>ages 2 months, 4 months, 6-18 months, and 4-6 years</i>	<i>- makes the chances of you getting polio less - improves the overall health of the community by reducing the spread of polio - if less people can get the disease, then less people can spread it</i>

The Matrix - A Vaccination Research Project
Teacher Resource 6: The Matrix (blank)

Overhead Transparency
Research Data Chart - **SAMPLE**


We are Learning About Vaccinations...


	What does it prevent	How does it work?	When do you get it?	Why do you get it?
Source 1 (CDC)				
Source 2				
Source 3				


The Matrix - A Vaccination Research Project

Teacher Resource 7: The Important Book About Vaccines


Overhead Transparency
Writing a Summary of Your Learning
SAMPLE

 The important thing about the Polio Vaccine is
it prevents the disease called Polio or Poliomyelitis

 When you are a child you get 4 shots of the Inactivated Polio
Vaccine (IPV)

 Before the Polio Vaccine, there were 20,000 cases of Polio in the
U.S. each year

 Polio can lead to paralysis and permanent disability

 The important thing about the Polio Vaccine is
it prevents the disease called Polio or Poliomyelitis

The Matrix - A Vaccination Research Project

Teacher Resource 8: The Important Book About Vaccines (blank)

Overhead Transparency
Writing a Summary of Your Learning
SAMPLE

 The important thing about _____ is







 The important thing about _____ is

The Matrix - A Vaccination Research Project

Teacher Resource 10 - Reference List

American Cancer Society <<http://www.cancer.org/docroot/home/index.asp>>

Immunization Action Coalition <<http://www.vaccineinformation.org/>>

Kagan, Spencer. (1992). *Cooperative Learning*. Resources for Teachers.

Kids Health Organization <<http://kidshealth.org>>

Murray, Bonnie P. (2002). *The New Teacher's Complete Sourcebook: Grades K-4*. Scholastic Books.

National Education Association Health Information Network <<http://www.neahin.org>>

Sexuality Information and Education Council of the United States <<http://www.siecus.org/index.cfm>>

U.S. Centers for Disease Control and Prevention <<http://www.cdc.gov/>>

U.S. Department of Health and Human Services <<http://www.hhs.gov/diseases/>>

Wong, Harry K. (1998). *The First Days of School: How to Be an Effective Teacher*. Harry K. Wong Publications Inc.

World Health Organization <www.who.org/>

Lesson Plan: Learning about our Sexual Health

Overview and Purpose: In this lesson, students will use a Venn Diagram to compare and contrast sexually transmitted infections (STIs).

Grade Level: Grades 5-8

Estimated Time Allotment: four class periods

(based on 50-minute class periods, with 45 minutes of instructional time for this lesson; specific durations of activities are provided within the Lesson Procedures section)

Curriculum Focus: Health

Learning Objectives

The student will be able to:

- describe the relevance, symptoms, treatment, and prevention of seven common STIs
- utilize prior knowledge to answer questions about STIs
- read and comprehend important facts about STIs
- compare and contrast information about STIs
- collaborate with other students

Standards Addressed

Health

American Alliance for Health, Physical Education, Recreation and Dance (AAHPERD) and American Association for Health Education (AAHE), National Health Education Standards

Health Education Standard 1: Students will comprehend concepts related to health promotion and disease prevention

1.5.4 (3-5) Describe ways to prevent common childhood injuries and health problems

1.8.5. (6-8) Describe ways to reduce or prevent injuries and other adolescent health problems

Health Education Standard 3: Students will demonstrate the ability to access valid information and products and services to

3.5.2 (3-5) Locate resources from home, school and community that provide valid health information

3.8.2. (6-8) Access valid health information from home, school, and community

Health Education Standard 8: Students will demonstrate the ability to advocate for personal, family and community health

8.5.1 (3-5) Express opinions and give accurate information about health issues

Mid-Continent Research for Education and Learning (McREL) Standards, Curriculum Standards for Health Education
Content Standard 7: Knows how to maintain and promote personal health

Lesson Plan: Learning about our Sexual Health

Level III (Grades 6-8) Benchmark 2. Knows how positive health practices and appropriate health care can help to reduce health risks (e.g., good personal hygiene, health screenings, self-examinations)

Content Standard 8: Knows essential concepts about the prevention and control of disease

Level II (Grades 3-5) Benchmark 1. Knows ways in which a person can prevent or reduce the risk of disease and disability

Sexuality Information and Education Council of the United States, Guidelines for Comprehensive Sexuality Education

Key Concept 4: Sexuality is a central part of being human, and individuals express their sexuality in a variety of ways.

Topic 4: Sexual Abstinence

Level 2: Children are not physically or emotionally ready for sexual intercourse and other sexual behaviors

Level 3: Abstinence from intercourse has benefits for teenagers and adults

Level 3: Sexual abstinence is the best method to prevent pregnancy and STDs/HIV

Level 3: Teenagers considering sexual activity should talk to a parent or other trusted adult about their decisions, contraception, and disease prevention

Key Concept 5: The promotion of sexual health requires specific information and attitudes to avoid unwanted consequences of sexual behavior

Topic 1: Reproductive Health - Men and women must care for their reproductive health

Level 3: Individuals who suspect something is wrong with their sexual or reproductive organs, such as genital discomfort or itching or a lump in a breast or testicle, should seek medical attention immediately

Level 3: Untreated STDs during adolescence can be especially dangerous to a boy's or girl's future reproductive capability

Topic 2: Contraception

Level 3: Some methods of contraception, such as condoms, can also prevent the transmission of STDs/HIV. The most effective methods of contraception, such as the Pill, injection, and the birth control patch do not help prevent the transmission of STDs/HIV. Couples who want to reduce their risk for both pregnancy and STDs/HIV need to use male or female condoms along with another effective method of contraception.

Topic 5: Sexually Transmitted Diseases

Level 2: STDs are sometimes referred to as sexually transmitted infections or STIs. STDs include diseases such as gonorrhea, syphilis, HIV infection, chlamydia, genital warts, and herpes. The viruses and bacteria that cause STDs are usually found in the semen, vaginal fluids, and blood of an infected person. STDs are most commonly passed during sexual contact, but some can also be passed by sharing unsterilized needles or from a mother to child during pregnancy, birth, or breastfeeding. Abstinence from sexual activity is an effective way to avoid STDs. STDs can be passed during vaginal, oral, or anal intercourse. STDs can be transmitted even if the person does not have signs of infection. Anyone, regardless of age or sexual orientation, can get STDs if they have sexual contact with an infected person. Uninfected individuals who engage in sexual behavior cannot get an STD from each other. A person can have more than one STD at a time and can get an

Lesson Plan: Learning about our Sexual Health

STD more than once. Those STDs caused by bacteria, such as gonorrhea, chlamydia, or syphilis, can be cured with prescription medication. Those STDs caused by viruses, such as HIV, human papillomavirus (one type of HPV causes genital warts), herpes, and hepatitis, can be treated but not cured.

Level 3: Many teenagers who have vaginal, oral, or anal intercourse will become infected with an STD. The major symptoms of most STDs include genital discharge, sores on the genitals or mouth, abdominal pain, painful urination, skin changes, genital itching, or sore throat. The symptoms of STDs can be hidden, absent, or unnoticed, especially in women. One cannot determine who has an STD by just looking at that person or at that person's genitals. The only sure way to know if someone is infected with an STD is from testing and a medical exam. Individuals suspecting that they have an STD should stop having sexual intercourse, promptly go to a healthcare provider for testing, and refer sexual partners to a healthcare provider as well. Untreated STDs can lead to serious health problems, including infertility. Hepatitis B and HPV are the only STDs that can be prevented by a vaccine. (Note: the HPV vaccine only prevents the strains responsible for about 70% of cervical cancers and 90% of genital warts cases.) Proper use of latex condoms, along with water-based lubricants, can greatly reduce but not eliminate the chance of getting an STD.

Science

National Science Education Standards, Science Content Standards

Content Standard C (Life Science): As a result of their activities in grades 5-8, all students should develop understanding of the structure and function in living systems

Curriculum Integrations

Reading and Language Arts, International Reading Association and National Council of Teachers of English Standards, Standards for the English Language Arts

3: Students apply a wide range of strategies to comprehend, interpret, evaluate, and appreciate texts. They draw on their prior experience, their interactions with other readers and writers, their knowledge of word meaning and of other texts, their word identification strategies, and their understanding of textual features (e.g., sound-letter correspondence, sentence structure, context, graphics)

4: Students adjust their use of spoken, written, and visual language (e.g., conventions, style, vocabulary) to communicate effectively with a variety of audiences and for different purposes

5: Students employ a wide range of strategies as they write and use different writing process elements appropriately

to communicate with different audiences for a variety of purposes

11: Students participate as knowledgeable, reflective, creative, and critical members of a variety of literacy communities

12: Students use spoken, written, and visual language to accomplish their own purposes (e.g., for learning, enjoyment, persuasion, and the exchange of information)

Social Studies, Center for Civic Education, National Standards for Civics and Government

Content Standard K-12, V: What are the Roles of the Citizen in American Democracy? What are important responsibilities of Americans?

Lesson Plan: Learning about our Sexual Health

Social Studies, National Center for History in Schools

Historical Thinking Content Standard 3: Historical Analysis and Interpretation

C. Analyze cause-and-effect relationships and multiple causation, including the importance of the individual, the influence of ideas

Lesson Procedures for Teacher

Before teaching the Lesson

Teacher Background: Content Background and Resources and Lesson Vocabulary (Teacher Resources 1 and 2)

Teacher Preparation:

Materials and Planning Notes

Prepare for the students to work in small groups

Prepare for students to conduct Internet research (*optional*) (Bookmark and test websites to be sure sites are not blocked or URLs have not changed) (Teacher Resource 1)

Prepare, Assemble and Review copies of STI Article Packets (Student Resource 1), one packet per student; Bacteria or Virus Quick Read (Student Resource 2), one per student; and Two Column Notes Handout (Student Resource 3), one per student.

Prepare to complete a sample Venn Diagram with the students (Teacher Resource 6) on an overhead or board

Prepare to list common STIs (Teacher Resource 4) on a blank overhead chart paper or board

Additional Materials: computers with Internet access (optional), chart paper, markers, tape, blank paper

During teaching of the Lesson

Opening Activity – Two Column Notes

15 minutes

1. Explain that you want to begin this lesson by giving students time to reflect about the topic of sexually transmitted infections on their own. Ask them to think about what they know. Direct students to complete the first column of the Two Column Notes Advanced Organizer (Student Resource 3).
2. Give students the handout and provide time for them to think and record.

Activate Prior Knowledge – Whole Class Discussion

30 minutes

Lesson Plan: Learning about our Sexual Health

1. Explain to the students that you asked them to complete the first column on their own because as a class you will be learning about sexually transmitted infections. Completing the first column starts them thinking about what they know and what they need to know about this important topic.
2. Define STIs (Sexually Transmitted Infections). Ask the students to suggest a meaning for this acronym. Using their input, provide a common meaning for the students.
(Preparation note: Use Teacher Resource 1 – Content Background and Resources to become familiar and well versed with this discussion material. As the discussion continues, the teacher will supplement the students’ knowledge with the necessary background information to begin this lesson.)
3. Conduct a whole class brainstorm to develop a list STIs. Use Teacher Resources 3 and 4 to facilitate the brainstorming activity.
4. Once the brainstorm is complete and there is a list of STIs on the board, check mark the seven STIs the students will be learning about during this lesson (hepatitis B, HIV/AIDS, syphilis, human papillomavirus (HPV) and genital warts, chlamydia, gonorrhea and genital herpes). Ask students why they think you marked those seven. Explain to students that the seven you marked are the most common infections among teenagers. Transition to the learning activity by explaining to students that they will be creating Venn Diagrams to compare and contrast two of the STIs on the list.

Learning Activities – Venn Diagram

90 minutes

1. Introduce this activity by modeling the creation of a Venn Diagram with the whole class.
 - A Venn Diagram is a special chart used to compare and contrast two things.
 - For this example the students will help you create a Venn Diagram comparing two types of organisms that cause diseases (bacteria and viruses). Provide students with Bacteria and Viruses Quick Read (Student Resource 2).
 - Ask the students to read the handout independently.
 - Explain that a Venn Diagram is two overlapping circles. Draw two overlapping circles on board.
 - Tell students what each part of the Venn Diagram is for. (Teacher Resource 5)
 - Once the parts of the Venn Diagram are explained, ask students to help you complete the chart using the topics bacteria and viruses (Teacher Resource 6).
2. Explain the Venn Diagram Procedures to the students.
 - Each group will be responsible for reading about two assigned STIs (Student Resource 1).
 - On chart paper, groups will create Venn Diagrams comparing and contrasting the two STIs.

Lesson Plan: Learning about our Sexual Health

- Each group will present their Venn Diagram to the class.
 - Finally, students will use the Venn Diagram created by the group to write paragraphs comparing and contrasting the STIs.
3. Assign each group two STIs from the STI List the class brainstormed during the opening of the lesson (Teacher Resource 3).
 4. Distribute the STI Article Packets (Student Resource 1).
 5. Begin by having the students independently read the two articles for the STIs assigned to their group.
 6. After students are finished reading, have the groups work together to create the Venn Diagram. Each article includes a Web Resources section for the students to do further research as needed.
Preparation note: If you plan to have the students use the Internet, bookmark websites for the students (Teacher Resource 1).
 7. After the Venn Diagrams are complete, groups will prepare to share the Venn Diagrams with the rest of the class.
 8. Once every group has shared, direct the students to work independently to write a paragraph about the two STIs their group compared. While they are writing, the students should be able to see the Venn Diagram they created with the group.

Closing Activity – Revisit Two Column Notes and Acrostic Poem

45 minutes

1. Explain that you want to end this lesson by giving students time to reflect on what they have learned about the topic of sexually transmitted infections. Ask them to think about what they have learned. Direct students to complete the second column of the Two Column Notes handout (Student Resource 3).
2. Give students the handout and provide time for them to think and record.
3. Explain and conduct the Acrostic Poem activity. Students will write Acrostic Poems for the word “prevention”.
 - Students write the word PREVENTION vertically on their paper.
 - Then they choose other descriptive STI words and phrases that are important to being sexually healthy and that begin with each of the letters in the word PREVENTION. Students write the words horizontally, next to each the letter. Copy the sample below (with two letters complete) on the board to give students an example.

Lesson Plan: Learning about our Sexual Health

P
R
Everyone can get them
Vaccines are available for HPV and HBV
E
N
T
I
O
N

Supplemental Materials

Resources to accompany this lesson plan have been created and are provided after this section. This lesson plan contains the following supplemental materials (as referenced throughout this section).

Student Resources

Student Resource 1: STI Article Packet
Student Resource 2: Bacteria or Virus Quick Read
Student Resource 3: Two Column Notes

Teacher Resources

Teacher Resource 1: Content Background and Resources for Teen Sexual Health
Teacher Resource 2: Lesson Vocabulary
Teacher Resource 3: STI Brainstorm
Teacher Resource 4: List of Sexually Transmitted Infections
Teacher Resource 5: Instructional Strategy Overview
Teacher Resource 6: Venn Diagram (blank)
Teacher Resource 7: Group Work Evaluation Rubric
Teacher Resource 8: Reference List

Modifications

- Complete the Venn Diagrams in pairs or independently.
- Complete the paragraph writing as a small group instead of independently.

Assessment

- Assessment of Learning Process: Anecdotally observe students during class and small group discussion.

Lesson Plan: Learning about our Sexual Health

- Assessment of Group Skills: Informally observe students working together. If appropriate, use the Group Work Evaluation Rubric (Teacher Resource 7) or create your own.
- Assessment of Content Knowledge: Evaluate students' written work products from this lesson (Two Column Notes – Student Resource 3) and STI Compare and Contrast Paragraph. Observe the students during presentations and information sharing.

After teaching the Lesson

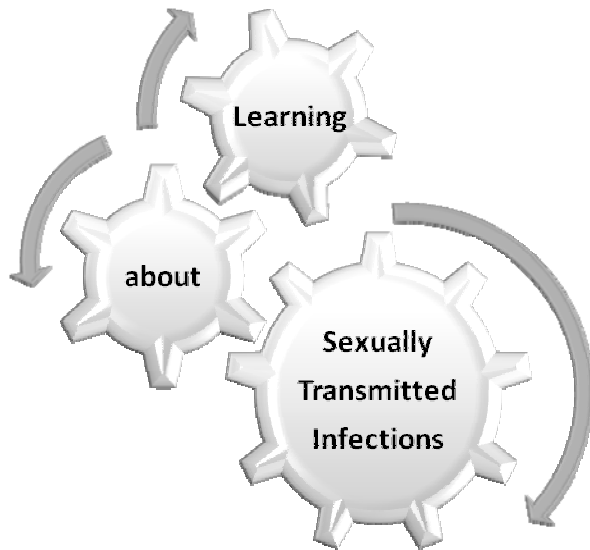
Extension and Additional Activities (Take Home Component)

- Plan to teach this lesson as well as other activities in honor of National STD Awareness Month in April. (It is also National Poetry Month.)
- Display the Venn Diagrams and have small groups create quizzes or “scavenger hunts” with questions for which the answers could be found on their posters. Have the students exchange quizzes with other groups and/or compile the “scavenger hunts” into one for individual students to complete.
- Teach another subject using a Venn Diagram.

Lesson At – A– Glance

Opening: Two Column Notes	45 minutes
Learning Activity: Venn Diagram	90 minutes
Closing: Two Column Notes and Acrostic Poem	45 minutes

Student Resource 1: STI Article Packet (HPV)



people get HPV each year. Most of the people with new infections are ages 15–24.

How Do You Know You Have It?

Most types of HPV have no **symptoms** and go away on their own. Some types of HPV can cause warts in the genital areas of males and females.

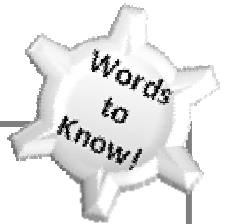
How Is It Spread?

HPV can be spread from skin-to-skin **contact**. Any person who has **genital contact** with another person can get HPV. A person with HPV can pass it along to another person without knowing it. It is not necessary to have sexual intercourse to spread HPV. A person is more likely to get HPV if they have sex at any early age, have many sex partners, or have a sex partner who has had many partners.

HPV (Human Papillomavirus)

What Is It?

HPV (Human Papillomavirus) is a **sexually transmitted infection** caused by a **virus**. It is one of the most common **viruses** in the United States. Over six million



<p>antibiotics a substance that fights bacteria</p> <p>bacteria tiny one-celled organisms</p> <p>contact exposure to a source of an infection</p> <p>cure A means of healing or restoring to health</p> <p>genital contact contact with sex organs</p> <p>infection invasion by and multiplication of harmful microorganisms in the body, which may progress to disease</p> <p>sexually transmitted infection (STI) an infection that is passed through genital contact</p> <p>symptom sign or indication of the presence of an infection</p> <p>virus an infectious agent that multiplies within cells and causes disease</p>

Student Resource 1: STI Article Packet (HPV)

What Can Happen?

Some types of HPV can lead to cervical cancer or other cancers. Cervical cancer is a cancer that begins in a woman's **cervix**. Approximately 10,000 women each year develop cervical cancer in the United States. HPV can also cause genital warts on men and women. Cervical cancer and genital warts are not caused by the same type of HPV. Genital warts have a cauliflower-like appearance.



Additional research for your project...

<http://www.cdc.gov/std/HPV/STDFact-HPV.htm>
<http://www.sexedlibrary.org/stds.html#humanpapilloma>
http://www.ashastd.org/hpv/hpv_overview.cfm
http://www.ashastd.org/learn/learn_hpv_warts.cfm
<http://www.teenwire.com/topics/infections-and-diseases.php>
<http://www.fda.gov/womens/getthefacts/hpv.html>
<http://www3.niaid.nih.gov/healthscience/healthtopics/humanpapillomavirus/index.htm>
http://www.cancer.org/docroot/CRI/CRI_2_1x.asp?rnav=criov&dt=8

How Is It Treated/Prevented?

There is no **cure** for HPV. There are ways to treat genital warts, cervical cancer and other health problems caused by HPV. Treating these health problems is easier if they are found early. Genital warts are typically treated with a medicine that is applied to the skin or with laser treatment. When genital warts are visible, people should not have any **genital contact**. Cervical cancer, other cancers caused by HPV, and pre-cancerous cells can be treated, but the treatment is often lengthy and painful.

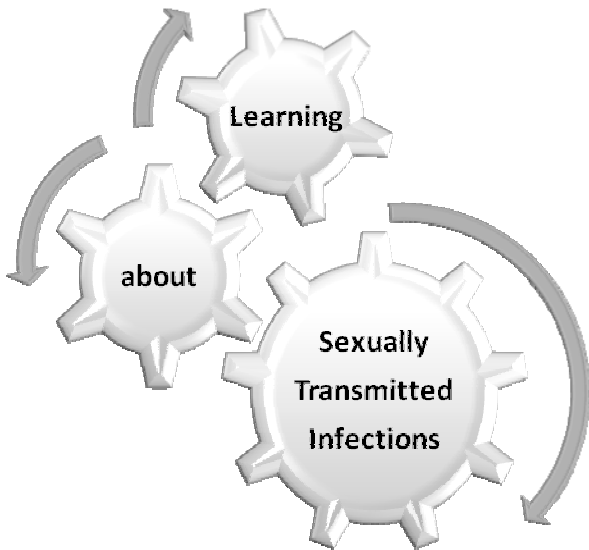
There is an HPV vaccine currently approved for females ages 9 - 26 that lowers the chances of getting cervical cancer and genital warts. The U.S. Centers for Disease Control and Prevention recommends that the vaccine be given to females who are ages 11-12 (or older, if you did not receive the vaccine when you were 11 or 12). Research is still being conducted to see if the vaccine works on males.

Student Resource 1: STI Article Packet (HPV)

There are several other ways to lower the chances of getting HPV. One way is to limit the number of sexual partners and choose a partner who has had no or few sex partners. Condoms do not completely protect against HPV. The best way to ensure protection is to not have sex.

Learning about our Sexual Health

Student Resource 1: STI Article Packet (Chlamydia)



Chlamydia

What Is It?

Chlamydia is a **sexually transmitted infection** caused by **bacteria**. It is one of the most frequently reported **infections** in the U.S. There are nearly three million new **infections** of chlamydia reported every year.



antibiotics

a substance that fights bacteria

bacteria

tiny one-celled organisms

contact

exposure to a source of an infection

cure

A means of healing or restoring to health

genital contact

contact with sex organs

infection

invasion by and multiplication of harmful microorganisms in the body, which may progress to disease

sexually transmitted infection (STI)

an infection that is passed through genital contact

symptom

sign or indication of the presence of an infection

virus

an infectious agent that multiplies within cells and causes disease

How Do You Know You Have It?

Most of the time there are no **symptoms** of chlamydia for men or women. Some men will have **symptoms** that show up about three weeks after he has been infected, such as whitish-yellow discharge from the penis, redness at the tip of the penis, a frequent urge to urinate and/or a burning sensation while urinating.

How Is It Spread?

Chlamydia is spread through **genital contact** during sexual activity.

Learning about our Sexual Health

Student Resource 1: STI Article Packet (Chlamydia)

What Can Happen?

Since chlamydia often has no **symptoms**, serious problems may develop as the **infection** spreads. One of the most common problems caused by chlamydia is pelvic inflammatory disease (PID). PID is an **infection** of the fallopian tubes or ovaries in women. PID can cause reproductive problems. PID can be diagnosed by a pelvic exam.

Additional research for your project...

<http://www.cdc.gov/std/Chlamydia/STDFact-Chlamydia.htm>

<http://www.sexedlibrary.org/stds.html#chlamydia>

http://www.ashastd.org/learn/learn_chlamydia_facts.cfm

<http://www3.niaid.nih.gov/healthscience/healthtopics/chlamydia/index.htm>

<http://www.cdc.gov/std/chlamydia/the-facts/default.htm>

<http://www.teenwire.com/topics/infections-and-diseases.php>

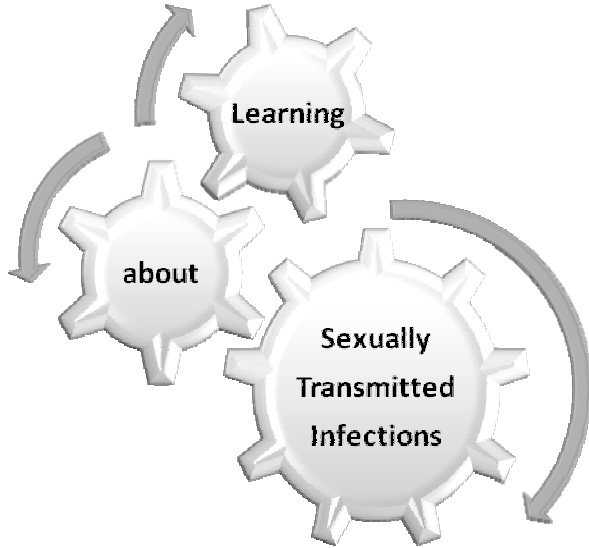


How Is It Treated/Prevented?

Chlamydia is treated with **antibiotics**. There are steps to lower the chances of getting chlamydia. A person making the decision to be sexually active should limit the number of sexual partners and choose a partner who has had no or few sex partners. Using condoms will reduce the spread of chlamydia. The surest way to prevent chlamydia is not to have sex.

Learning about our Sexual Health

Student Resource 1: STI Article Packet (Hepatitis B)

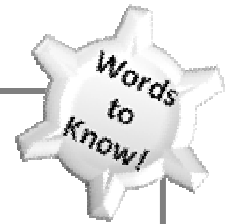


Hepatitis B (HBV)

What Is It?

Hepatitis is a **virus** that causes inflammation of the liver. There are five main types of hepatitis. The most common type is

hepatitis B (HBV). HBV is a **sexually transmitted infection**.



<p>antibiotics a substance that fights bacteria</p> <p>bacteria tiny one-celled organisms</p> <p>contact exposure to a source of an infection</p> <p>cure A means of healing or restoring to health</p> <p>genital contact contact with sex organs</p> <p>infection invasion by and multiplication of harmful microorganisms in the body, which may progress to disease</p> <p>sexually transmitted infection (STI) an infection that is passed through genital contact</p> <p>symptom sign or indication of the presence of an infection</p> <p>virus an infectious agent that multiplies within cells and causes disease</p>

How Do You Know You Have It?

The **symptoms** of HBV include jaundice (yellowing of skin, eyes, and mucous membranes), fatigue, abdominal pain, and loss of appetite, and vomiting. About one third of all people with HBV do not know they are infected.

How Is It Spread?

More than half of all HBV **infections** come from sexual activity. HBV is spread through the blood and bodily fluids of an infected person. It is also passed through blood product and contaminated intravenous (IV) needles. Infected pregnant women can transmit the **virus** to the baby during pregnancy and at delivery. The later in pregnancy a mother contracts the **virus**, the greater the

Learning about our Sexual Health

Student Resource 1: STI Article Packet (Hepatitis B)

chance of **infection** for her baby.

What Can Happen?

HBV can result in serious illness and liver damage, such as cirrhosis of the liver, liver cancer, and death.

How Is It Treated/Prevented?

There is no **cure** for Hepatitis B. Several medicines are available to treat chronic HBV. There are steps to lower the chances of getting HBV. There is a vaccine that prevents HBV. All children should get two doses of the HBV vaccine (birth and 6-18 months). Children and adolescents through 18 years of age who did not get the vaccine when they were younger should also be vaccinated. All unvaccinated adults at risk for hepatitis B should be vaccinated as well. The vaccine is one of the most effective ways to prevent HBV. HBV can also be prevented by avoiding IV drugs and IV drug needles and never sharing personal care items that might have blood on them such as razors or toothbrushes. There is also a risk of getting HBV from the tools used for tattoos or body piercings. A person making the decision to be sexually active should limit the number of sexual partners and choose a partner who has had no or few sex partners. Condoms (used correctly) can reduce the spread of HBV. The surest way to prevent HBV is to not have sex and limit your risk of exposure to other people's blood.



Additional research for your project...

<http://www.cdc.gov/NCIDOD/diseases/hepatitis/b/index.htm>

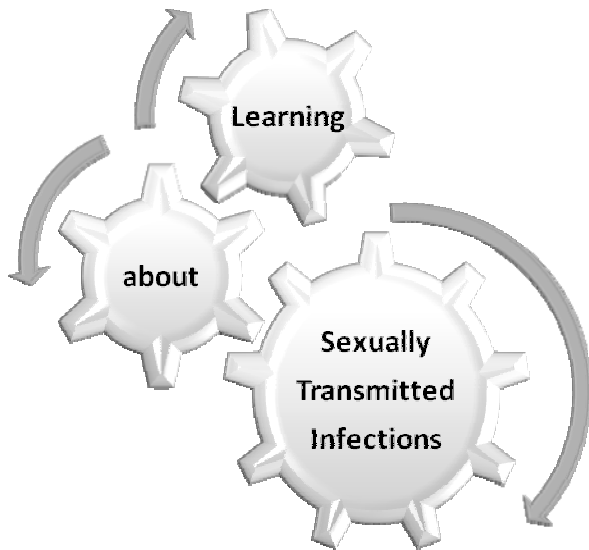
http://www.ashastd.org/learn/learn_hepatitis.cfm

<http://www3.niaid.nih.gov/research/topics/hepatitis/>

http://kidshealth.org/teen/infections/stds/std_hepatitis.html

<http://www.teenwire.com/topics/infections-and-diseases.php>

Student Resource 1: STI Article Packet (Genital Herpes)



genital herpes. One in five adults in the United States has genital herpes.

How Do You Know You Have It?

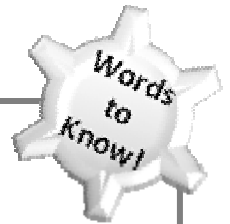
Almost nine out of ten of all infected people do not know they have genital herpes because HSV usually has no **symptoms**. When there are **symptoms**, they usually appear within two weeks after **infection** with an outbreak of painful blisters or open sores in the genital area. Small red bumps appear first, develop into blisters, and then become painful open sores. Over several days, the sores become crusty and then heal without leaving a scar. Some other **symptoms** that may occur with the first outbreak of genital herpes are fever, headache, muscle aches, painful or difficult urination, vaginal discharge, swollen glands in the groin area, itching or burning feeling in the genital or anal area, pain in the legs, buttocks, or genital area, and feeling of pressure in the abdomen. When the **symptoms**

Genital Herpes

What Is It?

Genital Herpes is a sexually transmitted **infection** caused by a **virus** called Herpes Simplex **Virus** (HSV).

There are two types of HSV, both of which can cause



antibiotics
a substance that fights bacteria

bacteria
tiny one-celled organisms

contact
exposure to a source of an infection

cure
A means of healing or restoring to health

genital contact
contact with sex organs

infection
invasion by and multiplication of harmful microorganisms in the body, which may progress to disease

sexually transmitted infection (STI)
an infection that is passed through genital contact

symptom
sign or indication of the presence of an infection

virus
an infectious agent that multiplies within cells and causes disease

Student Resource 1: STI Article Packet (Genital Herpes)

are visible, HSV type 1 is more likely to affect the lips, causing sores known as fever blisters or cold sores, but it also can infect the genital area and produce sores there. HSV type 2 usually triggers an attack of genital herpes.

How Is It Spread?

Genital herpes is spread through skin-to-skin **contact** typically with the genital area during sexual activity. Genital herpes is spread when the **virus** is in an active phase, even if there are no visible **symptoms**. Genital herpes is highly contagious. People often get genital herpes by having sexual **contact** with others who don't know they are infected. The **virus** can also spread from one area to another on the same person.



Additional research for your project...

<http://www.cdc.gov/std/Herpes/default.htm>
<http://www.cdc.gov/std/Herpes/the-facts/default.htm>
<http://www.cdc.gov/std/Herpes/STDFact-Herpes.htm>
<http://www.sexedlibrary.org/stds.html#herpes>
http://www.ashastd.org/herpes/herpes_overview.cfm
http://kidshealth.org/teen/infections/stds/std_herpes.html
<http://www.teenwire.com/topics/infections-and-diseases.php>

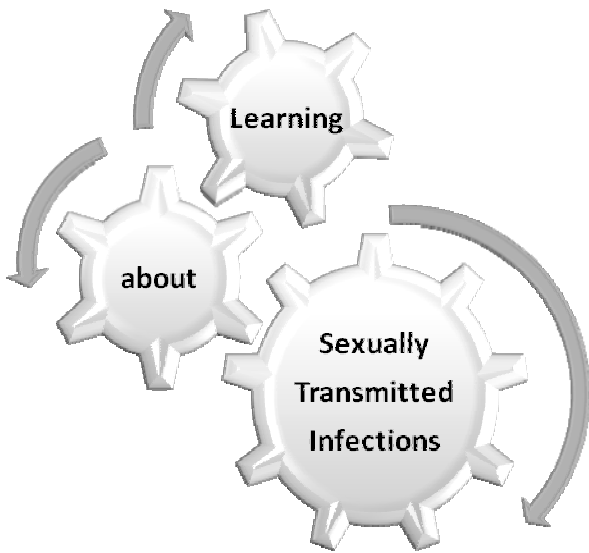
What Can Happen?

The sores usually disappear within two to three weeks, but the **virus** remains in the body for life.

How Is It Treated/Prevented?

There is no **cure** for genital herpes. Therefore, treatment only helps reduce the **symptoms**. Doctors can prescribe medications to give the infected person some relief. HSV can be prevented. A person making the decision to be sexually active should limit the number of sexual partners and choose a partner who has had no or few sex partners. The surest way to prevent genital herpes is to not have sex. A genital herpes vaccine is currently in development.

Student Resource 1: STI Article Packet (Syphilis)



Disease Control and Prevention, the rate of syphilis in the United States increases each year.

How Do You Know You Have It?

There are three stages of syphilis. The first stage is two to twelve weeks after exposure. The main **symptom** of syphilis is painless oval-shaped sores that appear on the genitals, rectum, anus, lips or mouth. These sores disappear on their own in two to four weeks but the **bacteria** stays in the body. Lymph nodes near the groin or in the neck may be swollen as well.

How Is It Spread?

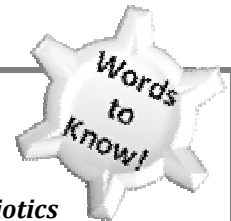
Syphilis is passed from person to person through direct **contact** with a sore during sexual activity. It is also possible for pregnant women to pass it to the babies they are carrying.

Syphilis

What Is It?

Syphilis is a sexually transmitted **infection** caused by the bacterium *Treponema pallidum*.

According to recent studies from the Centers for



antibiotics

a substance that fights bacteria

bacteria

tiny one-celled organisms

contact

exposure to a source of an infection

cure

A means of healing or restoring to health

genital contact

contact with sex organs

infection

invasion by and multiplication of harmful microorganisms in the body, which may progress to disease

sexually transmitted infection (STI)

an infection that is passed through genital contact

symptom

sign or indication of the presence of an infection

virus

an infectious agent that multiplies within cells and causes disease

Student Resource 1: STI Article Packet (Syphilis)

What Can Happen?

Syphilis is among the most serious of **sexually transmitted infections**. If the first stage of syphilis goes untreated, the disease moves on to the second stage one to six months later and it spreads into the bloodstream. This stage is characterized by **symptoms** like red rash, flu-like **symptoms** such as headache, fever, fatigue, loss of appetite and pain in the bones and joints. These **symptoms** also go away by themselves without treatment, but the **bacteria** still stays in the body. The third and most serious stage can begin one year or more after the initial infection. This stage can lead to permanent damage to the liver, bones, brain, heart and other organs. It can also cause arthritis, paralysis, blindness, dementia, and death. Syphilis also increases the risk of transmitting and acquiring the Human Immunodeficiency **Virus** (HIV), which causes AIDS.



Additional research for your project...

<http://www.cdc.gov/std/syphilis/default.htm>

<http://www.cdc.gov/std/Syphilis/STDFact-Syphilis.htm>

<http://www.sexedlibrary.org/stds.html#syphilis>

http://www.ashastd.org/learn/learn_syphilis_facts.cfm

<http://www3.niaid.nih.gov/healthscience/healthtopics/syphilis/default.htm>

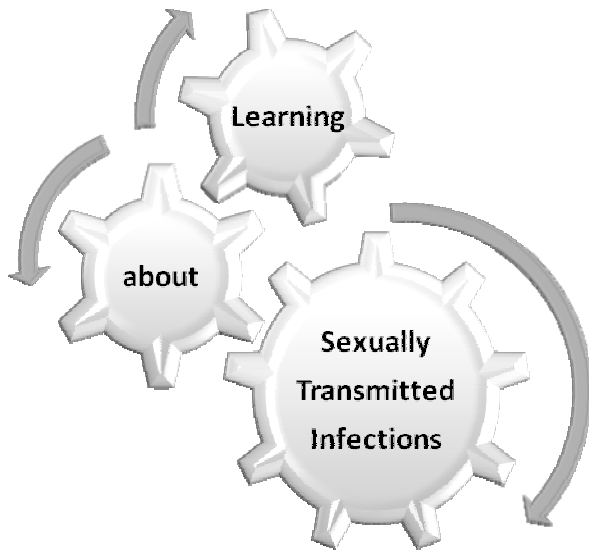
http://kidshealth.org/teen/infections/stds/std_syphilis.html

<http://www.teenwire.com/topics/infections-and-diseases.php>

How Is It Treated/Prevented?

Syphilis can be **cured** with penicillin. If it reaches the third stage, the damage that has already been done to the organs cannot be reversed. There are steps to lower the chances of getting syphilis. A person making the decision to be sexually active should limit the number of sexual partners and choose a partner who has had no or few sex partners. The surest way to prevent syphilis is to not have sex.

Student Resource 1: STI Article Packet (HIV)



HIV

What Is It?

HIV (Human Immunodeficiency Virus) is the **virus** that causes AIDS (Acquired Immune Deficiency Syndrome). HIV is a **virus** that attacks the immune system. The immune

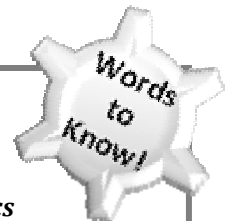
system is a group of cells and organs that protect the body by fighting disease. With HIV, as the person's immune system weakens they get other illnesses, many of which they would have easily fought off if they did not have HIV.

How Do You Know You Have It?

The CDC (Centers for Disease Control and Prevention) estimates that about one million people in the United States are living with HIV or AIDS. About one quarter of these people do not know that they are infected. Initially there are no **symptoms** for HIV, and often **symptoms** do not develop for many years. A person infected with HIV may look and feel perfectly well for many years and may not know that they are infected.

How Is It Spread?

HIV is transmitted through sexual **contact**. HIV cannot live



antibiotics
a substance that fights bacteria

bacteria
tiny one-celled organisms

contact
exposure to a source of an infection

cure
A means of healing or restoring to health

genital contact
contact with sex organs

infection
invasion by and multiplication of harmful microorganisms in the body, which may progress to disease

sexually transmitted infection (STI)
an infection that is passed through genital contact

symptom
sign or indication of the presence of an infection

virus
an infectious agent that multiplies within cells and causes disease

Student Resource 1: STI Article Packet (HIV)

for very long outside the body. As a result, the **virus** is not spread through day-to-day activities such as shaking hands or touching things like doorknobs. HIV is passed through the blood and sexual fluids of an infected person. An infected pregnant woman can also pass HIV to the baby during pregnancy or delivery, as well as through breast-feeding. HIV can also be spread through contaminated blood, blood products, and contaminated intravenous (IV) needles.

What Can Happen?

As time goes by, a person who has been infected with HIV is likely to become ill more and more often. Usually, several years after **infection** when they become seriously ill or when the number of immune system cells left drops below a particular level, a person is then considered to have AIDS. AIDS severely weakens the body's ability to fight **infections** and certain cancers.

How Is It Treated/Prevented?

There is no **cure** for HIV or AIDS. There are medical treatments that can slow down the rate at which the immune system weakens.

AIDS is an extremely serious condition, and at this stage the body has very little defense against any sort of **infection**.

There are steps to lower the chances of getting HIV. A person making the decision to be sexually active should limit the number of sexual partners and choose a partner who has had no or few sex partners.

Although condoms significantly reduce the risk of getting HIV,

they are not a guarantee. Other things that will lower the risk of getting HIV are to not take IV drugs and never share drug needles or personal care items that might have blood on them (razors, toothbrushes, etc.). There is also a risk of getting HIV from the tools used for tattoos or body piercings. The surest way to prevent HIV and AIDS is to not have sex.

Additional research for your project...

<http://www.sexedlibrary.org/stds.html#humanimmunodeficiency>

http://www.ashastd.org/learn/learn_hiv_aids_overview.cfm

<http://www.cdc.gov/hiv/topics/basic/index.htm#hiv>

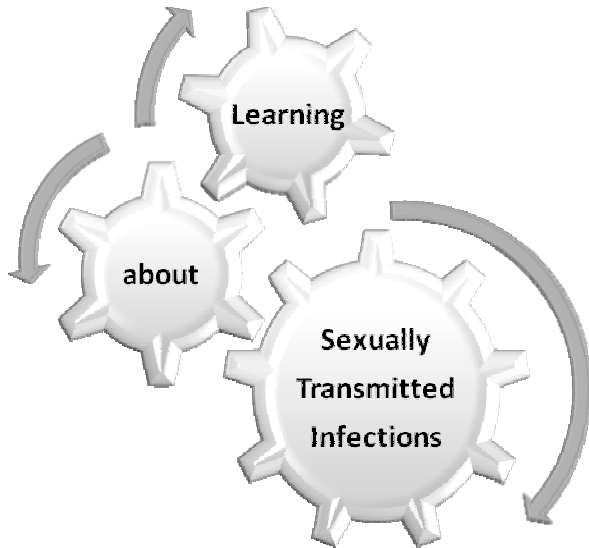
<http://www3.niaid.nih.gov/research/topics/HIV/default.htm>

<http://www.avert.org/aids-epidemic.htm>

<http://www.teenwire.com/topics/infections-and-diseases.php>



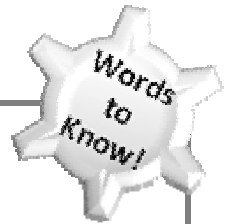
Student Resource 1: STI Article Packet (Gonorrhea)



Gonorrhea

What Is It?

Gonorrhea is a **sexually transmitted infection** caused by the bacterium *Neisseria gonorrhoeae*. Gonorrhea is the second most frequently reported **STI** in the United States.



antibiotics

a substance that fights bacteria

bacteria

tiny one-celled organisms

contact

exposure to a source of an infection

cure

A means of healing or restoring to health

genital contact

contact with sex organs

infection

invasion by and multiplication of harmful microorganisms in the body, which may progress to disease

sexually transmitted infection (STI)

an infection that is passed through genital contact

symptom

sign or indication of the presence of an infection

virus

an infectious agent that multiplies within cells and causes disease

How Do You Know You Have It?

The **symptoms** of gonorrhea are discharge from the vagina or penis and painful or difficult urination. Many women who are infected have no **symptoms**. Men are more likely to show **symptoms**. Some people may be infected for several months without showing **symptoms**.

How Is It Spread?

Gonorrhea is spread through genital **contact** during sexual activity. The **bacteria** that cause gonorrhea thrive in moist, warm areas of the body. Gonorrhea can also be spread to the mouth, eyes, and throat.

What Can Happen?

Student Resource 1: STI Article Packet (Gonorrhea)

Since gonorrhea often has no **symptoms** serious problems may develop as the **infection** spreads. One of the most common problems caused by gonorrhea is pelvic inflammatory disease (PID). PID is an **infection** of the fallopian tubes or ovaries in women. PID can cause reproductive problems. PID can be diagnosed by a pelvic exam. Gonorrhea also increases the risk of transmitting and acquiring the Human Immunodeficiency **Virus** (HIV), which causes AIDS.

Additional research for your project...

<http://www.cdc.gov/std/Gonorrhea/STDFact-gonorrhea.htm>

<http://www.sexedlibrary.org/stds.html#gonorrhea>

http://www.ashastd.org/learn/learn_gonorrhea_fact.cfm

<http://www3.niaid.nih.gov/healthscience/healthtopics/gonorrhea/index.htm>

<http://www.cdc.gov/std/Gonorrhea/the-facts/default.htm>



How Is It Treated/Prevented?

Antibiotics can **cure** gonorrhea. A person making the decision to be sexually active should limit the number of sexual partners and choose a partner who has had no or few sex partners. Condoms (used correctly) can reduce the spread of gonorrhea. The surest way to prevent gonorrhea is to not have sex.

Learning about our Sexual Health

Student Resource 2: Bacteria or Virus Quick Read

organism

Definition: An individual form of life, such as a plant, animal, bacterium, or fungus; a body made up of organs, or other parts that work together to carry on the various processes of life.

Context:

An organism can be single-cellular, like bacteria, or multicellular, like a human being or a plant.

bacteria

Definition: Tiny one-celled organisms present throughout the environment that require a microscope to be seen.

Context: While not all bacteria are harmful, some cause disease. Examples of bacterial disease include diphtheria, pertussis, tetanus, Haemophilus influenza and pneumococcus (pneumonia).

bacterium

Definition: The singular version of the word bacteria.

Context: Syphilis is a sexually transmitted infection caused by the bacterium *Treponema pallidum*.

virus

Definition: A tiny organism that multiplies within cells and causes disease such as chickenpox, measles, mumps, rubella, pertussis and hepatitis. Antibiotics, the drugs used to kill bacteria, do not affect viruses.

Context: Viruses are a major cause of disease and can infect human beings with measles, influenza, and the common cold.

Some Sexually transmitted Infections are caused by bacteria:

Gonorrhea

Syphilis

Chlamydia

Some Sexually Transmitted Infections are caused by a virus:

Herpes (HSV)

Hepatitis B (HBV)

HPV

HIV/AIDS

Learning about our Sexual Health

Student Resource 3: Two Column Notes

Sexually Transmitted Infections:

	What do I think before this lesson?	What do I know after this lesson?
What are they?		
How do you get them?		
How do you spread them?		
How do you prevent them?		

Learning about our Sexual Health

Teacher Resource 1: Content Background and Resources

“The primary goal of sexuality education is the promotion of adult sexual health. It assists children in understanding a positive view of sexuality, provides them with information and skills about taking care of their sexual health, and helps them acquire skills to make decisions now and in the future.”

*Statement from the Guidelines for Comprehensive Sexuality Education
From the National Guidelines Task Force*

“Each year, there are approximately 19 million new STD infections in the United States, and almost half of them are among youth aged 15 to 24. Thirty-four percent of young women become pregnant at least once before they reach the age of 20. These behaviors usually are established during childhood, persist into adulthood, are inter-related, and are preventable. In addition to causing serious health problems, these behaviors also contribute to the educational and social problems that confront the nation, including failure to complete high school, unemployment, and crime.”

*Statement from the National Center for Chronic Disease Prevention and Health Promotion
Division of Adolescent and School Health*

“Research indicates one out of every two teenagers will leave high school having been engaged in sexual activity. Research also shows increased numbers of teenagers who are contracting sexually transmitted diseases and HIV.”

*Statement from American Pediatric Association and the
Centers for Disease Control and Prevention*

Important Facts About Teen Sexual Health

- Sexually transmitted infections (STIs) affect men and women of all backgrounds and economic levels. They are most common among teenagers and young adults. Nearly half of all STIs occur in young people 15 to 24 years old. A recent study by the CDC released in March of 2008 estimates that one in four, 26 percent of young women between the ages of 14 and 19 in the United States – or 3.2 million teenage girls – are infected with at least one of the most common sexually transmitted diseases (human papillomavirus (HPV), chlamydia, herpes simplex virus, and trichomoniasis). Many STIs have no symptoms.

Learning about our Sexual Health

Teacher Resource 1: Content Background and Resources

- Even when no symptoms appear, an infected person may be able to pass the infection along to others. That is why many healthcare providers recommend periodic testing or screening.
- STIs can have serious consequences. Health problems caused by STIs tend to be more severe and more frequent for women than for men. They can lead to pelvic inflammatory disease (PID), fertility issues, genital warts, and/or cervical cancer.
- Many experts believe that having an STI increases the risk of becoming infected with HIV.
- If diagnosed and treated early, many STIs can be treated effectively.
- There are several steps that can be taken to prevent STIs.
- Education and effective communication can also assist in the process of preventing STIs in young people. The surest way to prevent all STIs remains abstinence. It is valuable for young adults to learn more about sexual health regardless of their choices. Teens need to be able to understand these issues in order to make good choices themselves and to help their peers make good choices as well. It is important to ensure that students have the necessary tools and knowledge to make healthy choices.

Key Points from the Department of Health and Human Services, Centers for Disease Control and Prevention

- The surest way to prevent any STI is not to have sex or to have sex only with someone who's not infected and who has sex only with you.
- Condoms can reduce your risk of getting an STI if used the right way every single time you have sex.
- Washing the genitals, urinating, or douching after sex will not prevent any STI.
- Touching doorknobs, toilet seats, sharing drinking cups, etc. does NOT spread STIs.
- STIs are NOT spread by coughing or sneezing.

Defining Sexually Transmitted Infections with Students

- Sexually transmitted infections (STIs) are infections that are transmitted through genital contact during sexual activity with another person who is contagious.
- STI means the same thing as the term venereal disease (VD), which is no longer used because it does not accurately explain the infections that can be passed through sexual activity.
- STI means the same thing as the term sexually transmitted disease (STD). STI is more accurate and more commonly used because of the word infection instead of disease. Many infections don't cause diseases or symptoms.

Learning about our Sexual Health

Teacher Resource 1: Content Background and Resources

- The term reproductive tract infection (RTI) is also sometimes used because not all the infections in the genitals are transmitted sexually. But this leaves out infections in the oral and anal areas.

Discussing the Relevance of this Material with Students

- Some STIs are more common than the common cold.
- Some STIs are mostly uncomfortable and embarrassing, while others are deadly serious.
- Teenagers are one of the highest risk groups for STIs.
- There are ways to prevent or reduce the risk of every STI.
- Almost every STI is treatable and/or curable.
- This lesson will be a review for some students, or some may feel they do not need it. It is still relevant for everyone because our knowledge and need for knowledge about sexual health is always changing. Even if students feel that they do not need this information for themselves, they can utilize it to help their friends and families.

Learning about our Sexual Health

Teacher Resource 1: Content Background and Resources

WEB RESOURCES

Content Background

http://www.guttmacher.org/pubs/fb_sexEd2006.html

<http://www.siecus.org/>

<http://www.washingtonpost.com/wpdyn/content/story/2008/03/13/ST2008031302113.html>

Lesson Plans and Resources on Internet Safety

<http://bnetsavvy.org/>

www.netsmartz.org/educators.htm

www.media-awareness.ca/english/games/index.cfm

<http://ilearn.isafe.org/>

www.cybersmartcurriculum.org/home

Group Work Rubric

http://www.uen.org/Rubric/rubric.cgi?rubric_id=12916

Create your own rubric

<http://rubistar.4teachers.org/index.php>

Resources for Bookmarking Websites for Students on the Internet

(How to create “bookmarks” of websites for the students to conduct Internet research)

<http://iKeepBookmarks.com>

<http://pagekeeper.teachingmatters.org/home>

<http://teachingtoday.glencoe.com/howtoarticles/social-bookmarking>

Suggested Websites to Bookmark for this Activity

<http://www.cdc.gov/std/HPV/STDFact-HPV.htm>

<http://www.sexedlibrary.org/stds.html#humanpapilloma>

http://www.ashastd.org/hpv/hpv_overview.cfm

http://www.ashastd.org/learn/learn_hpv_warts.cfm

<http://www.teenwire.com/topics/infections-and-diseases.php>

<http://www.fda.gov/womens/getthefacts/hpv.html>

http://www3.niaid.nih.gov/healthscience/healthtopics/human_papillomavirus/index.htm

http://www.cancer.org/docroot/CRI/CRI_2_1x.asp?rnav=criovanddt=8

Learning about our Sexual Health

Teacher Resource 1: Content Background and Resources

<http://www.cdc.gov/std/Chlamydia/STDFact-Chlamydia.htm>
<http://www.sexedlibrary.org/stds.html#chlamydia>
http://www.ashastd.org/learn/learn_chlamydia_facts.cfm
<http://www3.niaid.nih.gov/healthscience/healthtopics/chlamydia/index.htm>
<http://www.cdc.gov/std/chlamydia/the-facts/default.htm>
<http://www.teenwire.com/topics/infections-and-diseases.php>
<http://www.cdc.gov/std/Gonorrhea/STDFact-gonorrhea.htm>
<http://www.sexedlibrary.org/stds.html#gonorrhea>
http://www.ashastd.org/learn/learn_gonorrhea_fact.cfm
<http://www3.niaid.nih.gov/healthscience/healthtopics/gonorrhea/index.htm>
<http://www.cdc.gov/std/Gonorrhea/the-facts/default.htm>
<http://www.teenwire.com/topics/infections-and-diseases.php>
<http://www.cdc.gov/NCIDOD/diseases/hepatitis/b/index.htm>
http://www.ashastd.org/learn/learn_hepatitis.cfm
<http://www3.niaid.nih.gov/research/topics/hepatitis/>
http://kidshealth.org/teen/infections/stds/std_hepatitis.html
<http://www.teenwire.com/topics/infections-and-diseases.php>
<http://www.cdc.gov/std/Herpes/default.htm>
<http://www.cdc.gov/std/Herpes/the-facts/default.htm>
<http://www.cdc.gov/std/Herpes/STDFact-Herpes.htm>
<http://www.sexedlibrary.org/stds.html#herpes>
http://www.ashastd.org/herpes/herpes_overview.cfm
http://kidshealth.org/teen/infections/stds/std_herpes.html
<http://www.teenwire.com/topics/infections-and-diseases.php>
<http://www.cdc.gov/std/syphilis/default.htm>
<http://www.cdc.gov/std/Syphilis/STDFact-Syphilis.htm>
<http://www.sexedlibrary.org/stds.html#syphilis>
http://www.ashastd.org/learn/learn_syphilis_facts.cfm
<http://www3.niaid.nih.gov/healthscience/healthtopics/syphilis/default.htm>
http://kidshealth.org/teen/infections/stds/std_syphilis.html
<http://www.teenwire.com/topics/infections-and-diseases.php>
<http://www.sexedlibrary.org/stds.html#humanimmunodeficiency>
http://www.ashastd.org/learn/learn_hiv_aids_overview.cfm
<http://www.cdc.gov/hiv/topics/basic/index.htm#hiv>
<http://www3.niaid.nih.gov/research/topics/HIV/default.htm>

Learning about our Sexual Health

Teacher Resource 1: Content Background and Resources

<http://www.avert.org/aids-epidemic.htm>

<http://www.teenwire.com/topics/infections-and-diseases.php>

Learning about our Sexual Health

Teacher Resource 2: Lesson Vocabulary

antibiotic

Definition: A substance that fights bacteria

Context: Antibiotics, like Tetracycline or Erythromycin, can cure chlamydia.

bacteria

Definition: Tiny one-celled organisms present throughout the environment that require a microscope to be seen

Context: While not all bacteria are harmful, some cause disease. Examples of bacterial disease include diphtheria, pertussis, tetanus, Haemophilus influenza and pneumococcus (pneumonia).

bacterium

Definition: The singular version of the word bacteria

Context: Syphilis is a sexually transmitted infection caused by the bacterium Treponema pallidum.

carrier

Definition: A person or animal that harbors a specific infectious agent without visible symptoms of the disease; A carrier acts as a potential source of infection.

Context: There are an estimated 1-1.4 million carriers of hepatitis B in the U.S.

cirrhosis

Definition: Irreversible scarring of the liver, due to ongoing damage, which may affect liver function; Cirrhosis can lead to liver failure and even death.

Context: HBV can result in serious illness, such as cirrhosis of the liver.

contact

Definition: Exposure to a source of an infection, or a person so exposed

Context: If symptoms of gonorrhea develop, they usually appear within two to 10 days after genital contact with an infected partner.

cure

Definition: A means of healing or restoring to health

Context: The bad news is that there is no cure for genital herpes.

Learning about our Sexual Health

Teacher Resource 2: Lesson Vocabulary

disease

Definition: A condition of the living animal or plant body or of one of its parts that impairs normal functioning; typically manifested by distinguishing signs and symptoms

Context: Some diseases can be prevented with vaccines.

diagnose

Definition: To recognize (as a disease) by signs and symptoms

Context: Syphilis is diagnosed by a doctor through blood tests.

ectoparasite

Definition: A parasite that lives on the exterior of its host

Context: A parasite, such as a flea, lives on the exterior of another organism.

epidemic

Definition: The occurrence of more cases of disease than expected in a given area or among a specific group of people over a particular period of time

Context: The epidemic has now spread to every part of the United States.

exposure

Definition: Coming in direct contact with an agent that might cause a disease or infectious process

Context: Mixing sex with alcohol or other drugs increases the chances of unintended pregnancy and exposure to sexually transmitted infections.

fungus

Definition: Any of a diverse group of eukaryotic, single-celled or multinucleate organisms that live by decomposing and absorbing the organic material in which they grow

Context: Ringworm is a disease caused by a fungus.

immunity

Definition: Protection against a disease. There are two types of immunity, passive and active. Immunity is indicated by the presence of antibodies in the blood and can usually be determined with a laboratory test.

Context: Without evidence of immunity, it is beneficial to give the vaccine within 3-5 days of exposure.

infection

Definition: The state produced by the establishment of an infective agent in or on a suitable host

Learning about our Sexual Health

Teacher Resource 2: Lesson Vocabulary

Context: Pelvic inflammatory disease (PID) can result from a sexually transmitted infection.

intravenous

Definition: Situated, performed, or occurring within or entering by way of a vein

Context: Both men and women have acquired HIV through sex with an intravenous drug user.

lesion

Definition: Any localized, defined area of diseased tissue, as a spot, canker, blister, or scab

Context: Approximately 10,000 women each year in the U.S. will develop cervical cancer, and about 500,000 women will experience serious cervical lesions that may need treatment.

liver

Definition: A large reddish-brown human organ located in the upper right portion of the abdominal cavity; it performs several vital functions which are necessary for survival.

Context: Hepatitis is a virus that causes inflammation of the liver.

organism

Definition: A form of life. A complex structure of interdependent and subordinate elements whose relations and properties are largely determined by their function in the whole.

Context: The organism has both an inner (cytoplasmic) and outer membrane, separated by a cell wall.

prevent

Definition: To keep from occurring; avert; or hinder

Context: Abstinence is the only 100 percent effective way to prevent unplanned pregnancy and sexually transmitted infections.

protozoan

Definition: Any of a large group of single-celled, usually microscopic, eukaryotic organisms

Context: Amoebas, ciliates, flagellates, and sporozoans are protozoans.

risk

Definition: The probability that an event will occur

Context: Using condoms can lower the risk of getting a sexually transmitted infection.

Learning about our Sexual Health

Teacher Resource 2: Lesson Vocabulary

syndrome

Definition: A group of symptoms that together are characteristic of a specific disorder or disease

Context: Chronic fatigue syndrome shares symptoms with many other disorders.

symptom

Definition: A sign or an indication of disorder or disease, especially when experienced by an individual as a change from normal function, sensation, or appearance

Context: Genital herpes is one of those tricky infections that often have no symptoms.

vaccine

Definition: A substance that protects a body against a disease by causing the body's immune system to produce antibodies

Context: Some vaccines provide lifelong protection against infection, while others require several doses given at regular intervals.

universal precautions

Definition: Recommendations issued by the CDC to minimize the risk of transmission of bloodborne pathogens, particularly HIV and HBV

Context: Universal precautions are intended to prevent skin exposures of health-care workers to bloodborne pathogens.

virus

Definition: An infectious agent that multiplies within cells and causes diseases such as chickenpox, measles, mumps, rubella, pertussis and hepatitis. Antibiotics, the drugs used to kill bacteria, do not affect viruses.

Context: Viruses are a major cause of disease and can infect human beings with measles, influenza, and the common cold.

Learning about our Sexual Health

Teacher Resource 3: STI Brainstorm

Step 1: Identify the Topic

Make sure students understand what sexually transmitted infections (STIs) are before beginning the brainstorming activity. Sexually transmitted infections (STIs) are infections that are transmitted through genital contact during sexual activity with another person who is infected. Most STIs are curable, but some are not. If you have sex with someone who has an STI, you can get it too. Many people who have an STI don't know it because many STIs have no symptoms. The surest way to prevent STIs is not to have sex.

Step 2: Ask the Question

Can the students name any sexually transmitted infections (STIs)? Ask students to name infections that they believe to be sexually transmitted.

Step 3: Record Answers

Create a list on the board of all of the infections students provide.

Step 4: Clarify the List

Review the list that the students have provided. Indicate to the students which infections are classified as STIs and which are not and why. There are many resources that provide information about STIs some of which may classify some of these infections differently. Explain that for the purpose of this lesson we will rely on the classifications of credible organizations such as the CDC. Infections such as colds can technically be transmitted through sexual contact, but it is more likely that these common infections are transmitted through things like coughing and sneezing first, so they are not considered STIs. Mark the infections that are STIs. Move the infections that are not STIs to a separate list on the board entitled, "Not Considered STIs."

Step 4: Add to the list

Using Teacher Resource 4, add any additional STIs to the list that the students did not name. The final product on the board should be a written list of all of the STIs on the List of Sexually Transmitted Infections - Teacher Resource 4.

Step 5: Discuss STIs

Supplement the students' responses (using Teacher Resource 4) to ensure that the correct information is provided. Ask the students if they know which of the STIs listed is caused by a virus and which is caused by a bacterium. Explain the difference to the students. A bacterium is a tiny one-celled organisms present throughout the environment that require a microscope to be seen. Not all bacteria are harmful, but some cause disease. Diseases caused by bacteria can be cured with drugs called antibiotics. A virus is a tiny organism that multiplies within cells and causes diseases. Antibiotics, do not affect viruses. Discuss and identify STIs which can be transmitted ONLY through sexual contact and those which can SOMETIMES be transmitted through sexual contact.

Learning about our Sexual Health

Teacher Resource 4: List of Sexually Transmitted Infections (STIs)

Sexually Transmitted Infections			
	Overview	Type of Organism	Transmission Method (ONLY sexual contact or SOMETIMES sexual contact)
Bacterial Vaginosis (BV)	BV is the name of a condition in women where the normal balance of bacteria in the vagina is disrupted and replaced by an overgrowth of certain bacteria.	Bacterium	Sometimes
Chlamydia	A bacterial infection that can scar the fallopian tubes affecting a woman's ability to have children.	Bacterium	Only
Genital Herpes	Genital herpes is a recurrent skin condition that can cause skin irritations in the genital region (anus, vagina, penis).	Virus	Only
Gonorrhea	A bacterial infection of the penis, vagina or anus.	Bacterium	Only
Hepatitis A and B	A disease that affects the liver. There are more than four types. "A" and "B" are the most common.	Virus	Only
HIV Disease and AIDS	Human immunodeficiency virus or HIV is a virus that attacks the immune system resulting in Acquired Immunodeficiency Syndrome, or AIDS.	Virus	Only
Human Papillomavirus (HPV) and Genital Warts	HPV is a virus that affects the skin in the genital area, as well as a female's cervix. HPV usually clears the body on its own, without causing visible symptoms. Some types of persistent HPV infection can cause warts, abnormal cell changes, or cancer.	Virus	Only
Nongonococcal Urethritis (NGU)	NGU is a treatable bacterial infection of the urethra (the tube within the penis) often times associated with chlamydia.	Bacterium	Sometimes
Pelvic Inflammatory Disease (PID)	PID is a general term that refers to infection of the uterus (womb), fallopian tubes (tubes that carry eggs from the ovaries to the uterus) and other reproductive organs. It is a common and serious complication of some sexually transmitted infections.	Bacterium	Only
Pthiriasis (Pubic Lice or Crabs)	Also known as pediculosis pubis, crabs are parasites or bugs that live on the pubic hair in the genital area.	Insect	Sometimes
Syphilis	A treatable bacterial infection that can spread throughout the body and affect the heart, brain, nerves.	Bacterium	Only
Trichomoniasis	Trichomoniasis is a common sexually transmitted infection that affects both women and men.	Protozoan	Only
Urethritis	An infection of the urethra, the tube that urine goes through to leave the body. Urethritis is often caused by an STI.	Bacterium	Sometimes

Learning about our Sexual Health

Teacher Resource 4: List of Sexually Transmitted Infections (STIs)

Commonly Confused

Non-Sexually Transmitted Infections

Infections the students may incorrectly name as STIs during the brainstorm

Cytomegalovirus (CMV)	CMV is a common virus that infects people of all ages. Once CMV is in a person's body, it stays there for life.
Epstein-Barr Virus (EBV) and Mononucleosis	Many children become infected with EBV, and these infections usually cause no symptoms or are indistinguishable from the other mild, brief illnesses of childhood. When infection with EBV occurs during adolescence or young adulthood, it causes infectious mononucleosis.
Giardiasis	Giardiasis is a parasitic disease caused by a microscopic parasite. The parasite is found on surfaces or in soil, food, or water that has been contaminated with the feces from infected humans or animals. People can become infected after accidentally swallowing the parasite. Giardia causes diarrheal illness, and giardiasis is a common cause of waterborne disease in humans in the United States.
Group A Streptococcus (GAS)	Group A Streptococcus is a bacterium often found in the throat and on the skin. Most GAS infections are relatively mild illnesses such as "strep throat," or impetigo. These bacteria are spread through direct contact with mucus from the nose or throat of persons who are infected or through contact with infected wounds or sores on the skin.
Hepatitis C	Hepatitis C is a liver disease caused by the hepatitis C virus (HCV). HCV infection sometimes results in an acute illness, but most often becomes a chronic condition that can lead to cirrhosis of the liver and liver cancer. It spreads through contact with the blood of an infected person, primarily through sharing contaminated needles to inject drugs.
Human Parainfluenza Viruses (HPIVs) or Common Cold	HPIVs can also cause serious lower respiratory tract disease with repeat infection (e.g., pneumonia, bronchitis, and bronchiolitis).
Influenza (Flu)	Influenza is a contagious respiratory illness caused by influenza viruses.
Pediculosis (Head Lice)	Head lice infest the head and neck and attach their eggs to the base of the hair shaft. Lice move by crawling; they cannot hop or fly. Head lice infestations are spread most commonly by close person-to-person contact.
Scabies	Scabies is an infestation of the skin with the microscopic mite <i>Sarcoptes scabiei</i> . Scabies spreads rapidly under crowded conditions where there is frequent skin-to-skin contact between people, such as in hospitals, institutions, child-care facilities, and nursing homes.
Tinea Cruris (Jock Itch) Tinea Pedit (Athlete's Foot)	Dermatophytes are types of fungi that cause common skin, hair and nail infections. One example of a very common dermatophyte infection is athlete's foot, which is also called tinea pedis. Another common dermatophyte infection affecting the groin area is jock itch, also known as tinea cruris.
Candidiasis (Yeast Infection)	Candidiasis is a fungal infection that occurs when there is overgrowth of fungus called <i>Candida</i> . <i>Candida</i> is normally found on skin or mucous membranes.

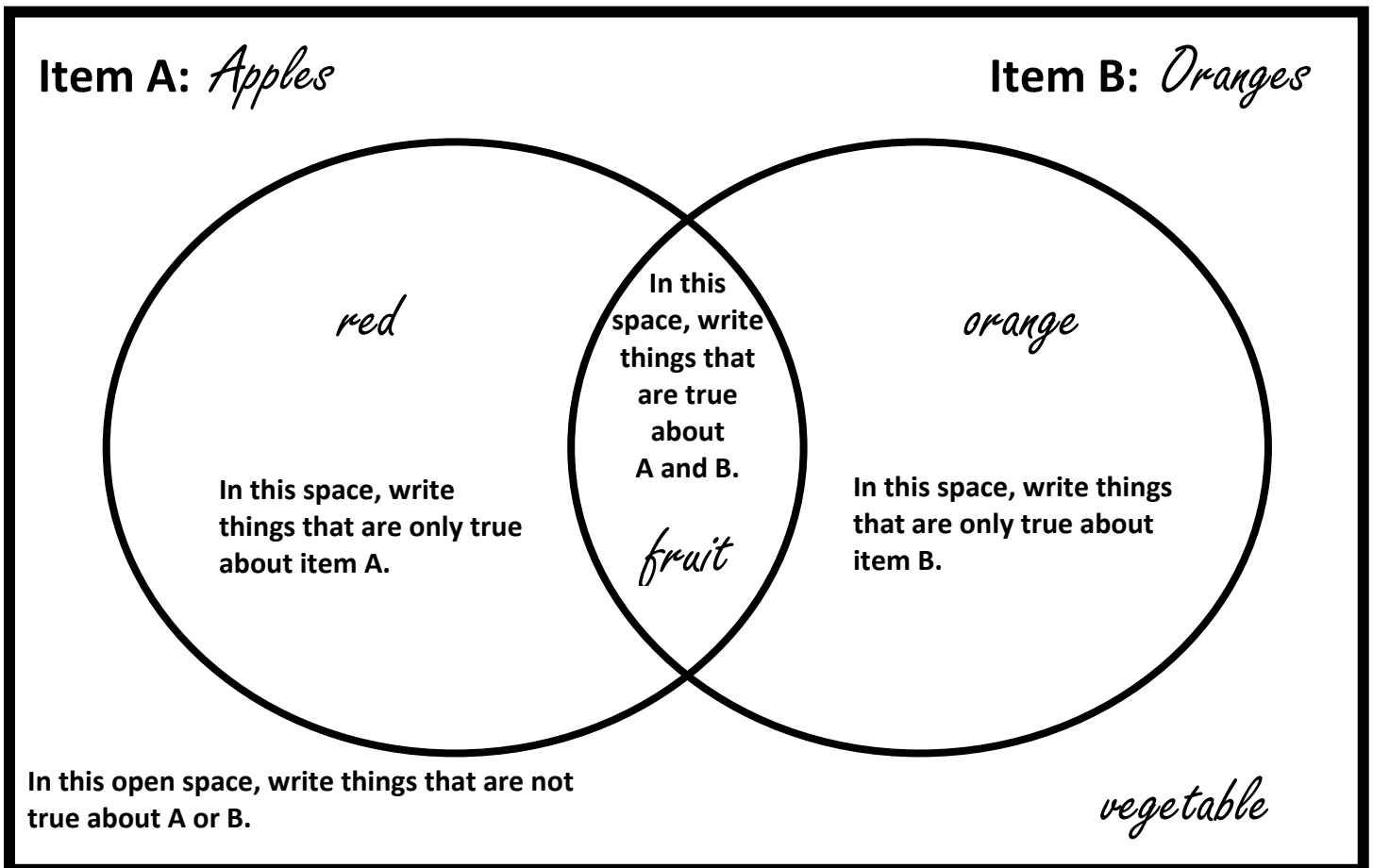
Learning about our Sexual Health

Teacher Resource 5: Instructional Strategy Overview

Venn Diagram

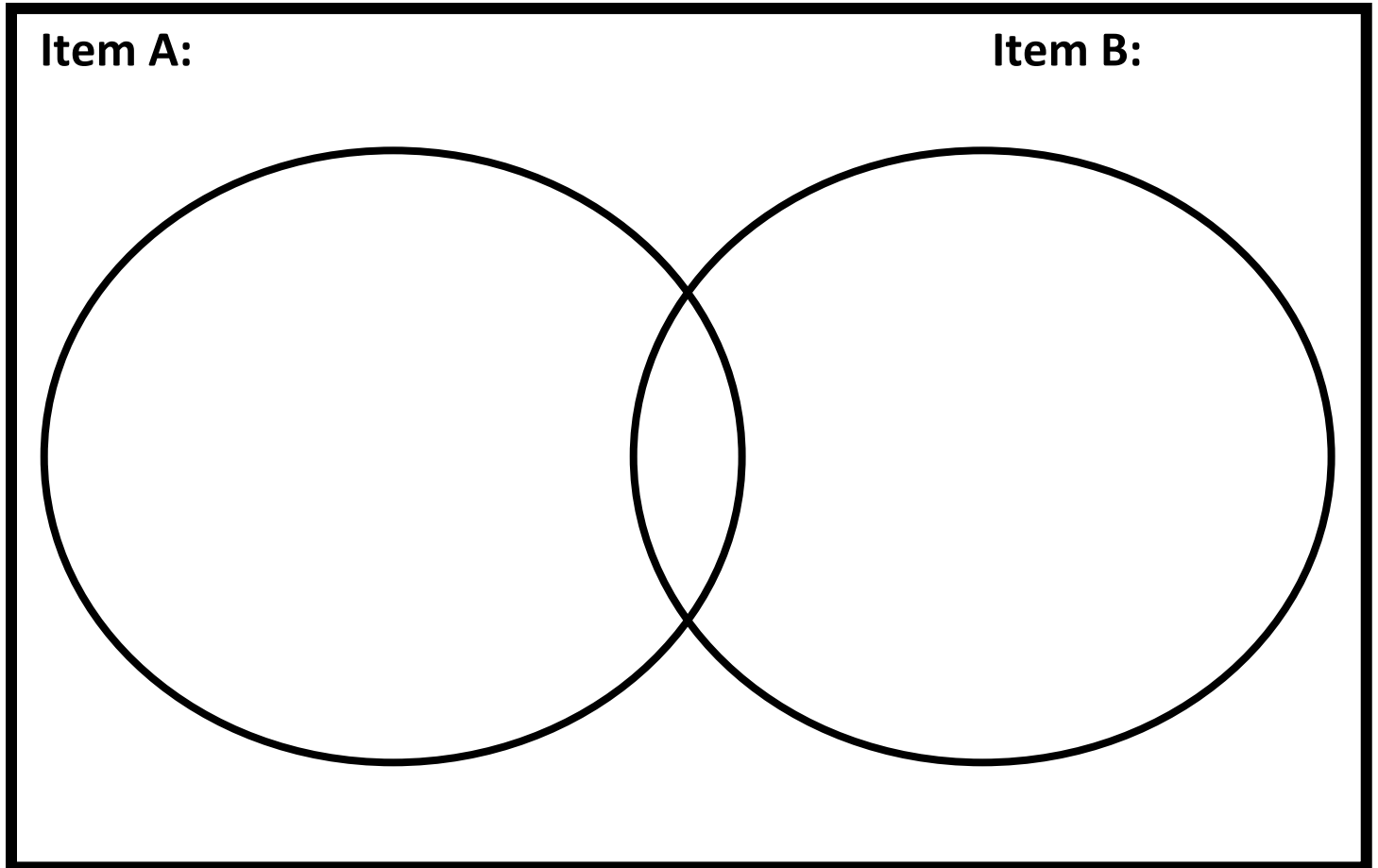
A Venn diagram is a graphic organizer made up of two or more overlapping circles. They are often used in mathematics to show relationships between sets. In language arts or cross curricular instruction, Venn Diagrams are useful for examining the similarities and differences of two concepts or topics. Venn diagrams were invented around 1880 by John Venn.

Sample



Learning about our Sexual Health

Teacher Resource 6: Venn Diagram (blank)



Learning about our Sexual Health

Teacher Resource 7: Group Work Evaluation Rubric

Directions: Explain the rubric to the class before the activity begins. First, have students complete a self-evaluation using the first Group Work Rubric on the sheet. Second, give the rubric to a group member to complete the second rubric. Finally, based on anecdotal observations, the teacher completes the third rubric on the page.

STUDENT NAME _____

SELF EVALUATION

Venn Diagram	Point Total ____/12				Total
	1	2	3	4	
Prepared to work with teammates (completed reading)	never	rarely	often	always	
Listened to others, offered ideas and shared information	never	rarely	often	always	
Encouraged and supported teammates	never	rarely	often	always	

PEER EVALUATION

Venn Diagram	Point Total ____/12				Total
	1	2	3	4	
Prepared to work with teammates (completed reading)	never	rarely	often	always	
Listened to others, offered ideas and shared information	never	rarely	often	always	
Encouraged and supported teammates	never	rarely	often	always	

TEACHER EVALUATION

Venn Diagram	Point Total ____/12				Total
	1	2	3	4	
Prepared to work with teammates (completed reading)	never	rarely	often	always	
Listened to others, offered ideas and shared information	never	rarely	often	always	
Encouraged and supported teammates	never	rarely	often	always	

Evaluation Point Total ____/36

Learning about our Sexual Health

Teacher Resource 8: Reference List

American Cancer Society <<http://www.cancer.org/docroot/home/index.asp>>

American Social Health Association < <http://www.iwannaknow.org/>>

Immunization Action Coalition <<http://www.vaccineinformation.org/>>

Kagan, Spencer. (1992). *Cooperative Learning*. Resources for Teachers.

Kids Health Organization <<http://kidshealth.org>>

Murray, Bonnie P. (2002). *The New Teacher's Complete Sourcebook: Grades K–4*. Scholastic Books.

National Education Association Health Information Network <<http://www.neahin.org>>

Sexuality Information and Education Council of the United States <<http://www.siecus.org/index.cfm>>

U.S. Centers for Disease Control and Prevention <<http://www.cdc.gov/>>

U.S. Department of Health and Human Services <<http://www.hhs.gov/diseases/>>

Wong, Harry K. (1998). *The First Days of School: How to Be an Effective Teacher*. Harry K. Wong Publications Inc.

World Health Organization <www.who.org/>

Lesson Plan: Vaccination Investigation

Overview and Purpose:

Through a cooperative learning activity called an Expert Jigsaw, students will develop an understanding and awareness of six types of vaccines. Students will gain knowledge about each vaccine and the disease each vaccine prevents. This knowledge will teach students why vaccines are an important tool for maintaining a healthy lifestyle for themselves, their families, and the community.

Grade Level: Grades 9-12

Estimated Time Allotment: Four class periods

(based on 50-minute class periods, with 45 minutes of instructional time per class for this lesson; specific durations of activities are provided within the Lesson Procedures section)

Curriculum Focus: Health and Science

Learning Objectives

The student will be able to...

- utilize prior knowledge to answer questions about vaccines
- read, comprehend and identify important facts about vaccines
- describe which diseases various vaccines prevent
- describe relevant information about the following vaccines: polio, MMR, DTaP, hepatitis B, varicella, HPV, and meningococcal
- collaborate with other students

Standards Addressed

Health

American Alliance for Health, Physical Education, Recreation and Dance (AAHPERD) – American Association for Health Education (AAHE), National Health Education Standards

Health Education Standard 1: Students will comprehend concepts related to health promotion and disease prevention

1.12.5. (9-12) Propose ways to reduce or prevent injuries and health problems

1.12.8. (9-12) Analyze personal susceptibility to injury, illness or death if engaging in unhealthy behaviors

Health Education Standard 3: Students will demonstrate the ability to access valid information and products and services to

3.12.2. (9-12) Use resources from home, school and community that provide valid health information

Lesson Plan: Vaccination Investigation

Health Education Standard 2: Students will analyze the influence of family, peers, culture, media, technology and other factors on health behavior

2.12.10. (9-12) Analyze how public health policies and government regulations can influence health promotion and disease prevention

Health Education Standard 8: Students will demonstrate the ability to advocate for personal, family and community health.

8.12.3. (9-12) Work cooperatively as an advocate for improving personal, family and community health

Mid-Continent Research for Education and Learning (McREL) Standards

Curriculum Standards for Health

Content Standard 2: Knows environmental and external factors that affect individual and community health

Level IV (Grade 9-12) Benchmark 4. Understands how the prevention and control of health problems are influenced by research and medical advances.

Knowledge/skill statements

1. Understands how the prevention of health problems are influenced by research
2. Understands how the prevention of health problems are influenced by medical advances
3. Understands how the control of health problems are influenced by research
4. Understands how the control of health problems are influenced by medical advances

Content Standard 8: Knows essential concepts about the prevention and control of disease

Level IV (9-12) Benchmark 1. Understands how the immune system functions to prevent or combat disease

Knowledge/skill statements

1. Understands how the immune system functions to prevent disease
2. Understands how the immune system functions to combat disease

Curriculum Standards for Career Education/Health Education

Content Standard 9: Knows techniques to prevent the spread of illness and disease

Level IV (Grade 9-12) Benchmark 1. Knows the body's natural defense systems against infection such as barriers, the inflammatory response, and the immune response

Knowledge/skill statements

1. Knows the body's natural defense systems against infection
2. Understands the role of barriers as a natural defense against infection
3. Understands the inflammatory response as a natural defense against infection
4. Understands the immune response as a natural defense against infection

Lesson Plan: Vaccination Investigation

Content Standard 9: Knows techniques to prevent the spread of illness and disease
Level IV (Grade 9-12) Benchmark 2. Knows common infectious diseases present at school or home and details of the diseases (e.g., signs and symptoms, means of transmission, causative microorganism, and recommendations to prevent the spread of the diseases)

Knowledge/skill statements

1. Knows common infectious diseases present at school or home
2. Knows details of common infectious diseases present at school or home
3. Knows the signs and symptoms of common infectious diseases
4. Knows how common infectious diseases are transmitted
5. Knows the microorganisms that cause common infectious diseases
6. Knows recommendations to prevent the spread of common infectious diseases

Science

National Science Education Standards, Science Content Standards

Content Standard C (Life Science): As a result of their activities in grades 9-12, all students should develop understanding of the behavior of organisms

Content Standard F (Science in Personal and Social Perspectives): As a result of activities in grades 9-12, all students should develop understanding of personal and community health

Curriculum Integrations

Reading and Language Arts, International Reading Association and National Council of Teachers of English Standards, Standards for the English Language Arts

3: Students apply a wide range of strategies to comprehend, interpret, evaluate, and appreciate texts. They draw on their prior experience, their interactions with other readers and writers, their knowledge of word meaning and of other texts, their word identification strategies, and their understanding of textual features (e.g., sound-letter correspondence, sentence structure, context, and graphics)

4: Students adjust their use of spoken, written, and visual language (e.g., conventions, style, and vocabulary) to communicate effectively with a variety of audiences and for different purposes

5: Students employ a wide range of strategies as they write and use different writing process elements appropriately

to communicate with different audiences for a variety of purposes

11: Students participate as knowledgeable, reflective, creative, and critical members of a variety of literacy communities

12: Students use spoken, written, and visual language to accomplish their own purposes (e.g., for learning, enjoyment, persuasion, and the exchange of information)

Social Studies, Center for Civic Education, National Standards for Civics and Government

Content Standard K-12, V: What are the Roles of the Citizen in American Democracy? What are important responsibilities of Americans?

Social Studies, National Center for History in Schools

Historical Thinking Content Standard 3: Historical Analysis and Interpretation

Lesson Plan: Vaccination Investigation

C. Analyze cause-and-effect relationships and multiple causation, including the importance of the individual, the influence of ideas

Lesson Procedures for Teacher

Before teaching the Lesson

Teacher Background: Content Background and Resources, Lesson Vocabulary, and Instructional Strategy Overview (Teacher Resources 1, 2 and 3)

Teacher Preparation:

Materials and Planning Notes

Prepare a Vaccination Articles Packet for each student (Student Resource 1). Attach a copy of the CDC Vaccination Schedules to each packet. (To obtain the most recent copy of the vaccination schedule go to <http://www.cdc.gov/vaccines/recs/schedules/default.htm>.)

Prepare Assignment Cards (Student Resource 2)

Prepare to have the students work in “Home” Groups made up of seven students

Prepare locations for “Home” and “Expert” Group meetings

Prepare to have a variety of materials available to the “Expert” Groups as they meet

Additional Materials: chart paper, markers, tape

During teaching of the Lesson

Opening Activity – Think-Pair-Share

45 minutes

1. Introduce the topic of vaccinations to the group by leading a small group Think-Pair-Share discussion. (What is a vaccine? Why are vaccines important?) (*Preparation note: Use Teacher Resource 1 – Content Background Knowledge and Resources to become familiar and well versed with the answers to these questions. As the discussion continues, the teacher will supplement the students’ discussion with the necessary background information to begin the Jigsaw.*)
2. Continue Think-Pair-Share discussion. (What are some common vaccines you know of or have received?) Can students list any vaccinations? (Generate answers and list them on the board.)
3. Supplement the list and highlight the following vaccines by specifying/circling them:
 - Polio
 - MMR (measles, mumps, rubella)

Lesson Plan: Vaccination Investigation

- DTaP (DTaP=Pediatric - Diphtheria-Tetanus-acellular Pertussis vaccine)
 - Hepatitis B
 - Varicella
 - HPV
 - Meningococcal
4. Continue Think-Pair-Share discussion. (What is an immune system? How do vaccines work? What does a vaccine do? What does it mean if something is infectious? What does it mean if someone is contagious? What is immunity? What is Herd Immunity?) Supplement discussion with background information.
 5. Continue Think-Pair-Share discussion. (What are the potential side effects of vaccinations? Should vaccinations be required?) Supplement discussion with background information.
 6. Introduce the lesson objective: Students will learn about these vaccinations by participating in the Expert Jigsaw Activity.

Learning Activity – Expert Jigsaw

90 minutes

1. Have the students sit in their “Home” Groups.
2. Explain the Expert Jigsaw activity procedures to the students:
 - Students are all placed in “Home” Groups, and within those groups each student is assigned as an "Expert" to be responsible for a particular topic.
 - “Experts” learn their own topic either individually or cooperatively with other experts in an "Expert” Group.
 - “Experts” return to the home group, and each person teaches the rest of the home group about expert material that was covered.
3. Pass out Assignment Cards (Student Resource 2) to each group (one set per group). Ask the students to keep the cards face down until directed.
4. Direct the students to turn the card over and explain that the number they have is the number of the article they will be reading and the number for their “Expert” Group.
5. Have the whole class brainstorm questions they want the “Experts” to answer about each vaccine. Post these questions and review them with the class. Supplement the list as necessary. The “Expert” Group’s teaching plan should address these items:
 - What infection and/or disease(s) does this vaccine prevent?
 - Describe the infection and/or disease(s) this vaccine prevents. What are the symptoms? What can it lead to?
 - Who should receive the vaccine? When is the best time to receive the vaccine? Is there a “window” for vaccination?
 - What are some possible side effects of the vaccine?

Lesson Plan: Vaccination Investigation

- Should this vaccine be required?
 - What is the history of this vaccine?
 - Do kids our age need this vaccine?
6. Have students move to sit in the “Expert” Groups. Pass out Article Packets (Student Resource 1). Every student gets the same packet and will read about the section of the packet for the vaccine they are assigned. The packets also contain the vaccination schedules for pre-teen and adolescent vaccines (everyone will read this part). Allow time for reading and discussion. The “Experts” must have enough time and the necessary materials to develop a teaching plan in order to return to their home group and share the information about the vaccination they are studying.
 7. Have students return to their home groups to share their “Expert” information.

Closing Activity – Top Ten

45 minutes

1. In “Home” Groups, ask students to discuss what they feel are the most important points from the “Expert” presentations.
2. Ask students to appoint a recorder in their “Home” Group.
3. Provide each group with tape, chart paper, and markers.
4. Ask groups to create a Top Ten Most Important or Interesting Things about Vaccines List and record the list on chart paper.
5. Post lists around the room and allow students time to view each other’s lists.
6. Summary Discussion Questions: Why is it important to vaccinate against rare diseases? Considering what you learned about vaccinations, why do you think most are given during the first year of life? Do you think there will be new vaccinations required during your lifetime? Explain your answer.
7. Optional: Use one of the ideas provided in the Assessment or Extension section of this lesson plan.

Supplemental Materials

Resources to accompany this lesson plan have been created and are provided after this section. This lesson plan contains the following supplemental materials (as referenced throughout this section).

Student Resources

Student Resource 1: Vaccination Article Packet

Student Resource 2: Jigsaw Assignment Cards

Student Resource 3: Vaccination Quick Write

Lesson Plan: Vaccination Investigation

Teacher Resources

Teacher Resource 1: Content Background and Resources for Vaccine Education

Teacher Resource 2: Lesson Vocabulary

Teacher Resource 3: Instructional Strategy Overview

Teacher Resource 4: Group Work Evaluation Rubric

Teacher Resource 5: Reference List

Modifications

- Give students the opportunity to select the “Expert” Group they want to join rather than being assigned
- To find out what to do if you have an uneven number of students, read the Instructional Strategy Overview (Teacher Resource 3)
- Have “Home” Groups present the Top Ten lists during the closing
- Hold a class debate about whether certain vaccinations should be mandatory
- Find out when National Immunization Week is honored and plan a unit for that time
- Instead of the Jigsaw Article Packet, order or download/print a variety of publications regarding vaccinations from various organizations listed on Content Background and Resources for Vaccine Education (Teacher Resource 1). Provide these materials to the expert groups for their research.

Assessment

- Assessment of Learning Process: Anecdotally observe students during class and small group discussion.
- Assessment of Group Skills: Informally observe students working together. If appropriate, use the Group Work Evaluation Rubric (Teacher Resource 4) or create your own.
- Assessment of Content Knowledge: If appropriate, use the Vaccination Quick Write Activity (Student Resource 3) at the end of the lesson, collect and evaluate. The Quick Write can also be utilized as a Pre and Post Assessment.

After teaching the Lesson

Extension and Additional Activities (Take Home Component)

- Have students take home the Vaccine Inventory Article packet and/or Top Ten Lists to share with their families. Together families can create a “Vaccination Plan” by listing each family member and creating columns for the seven vaccines in the article packet.

Lesson Plan: Vaccination Investigation

- They can indicate if each family member has already been vaccinated or still needs to/still can be vaccinated for the disease. Have students bring the Family Vaccination Plan back to class for discussion.
- Complete the Expert Jigsaw activity, again choosing alternative vaccinations not included in this lesson such as Influenza, Rotavirus, Pneumococcal, Hib, and Hepatitis A.
- Teach another subject using the Expert Jigsaw activity.

Lesson At – A– Glance

Opening: Group Discussion and Think-Pair-Share	45 minutes
Learning Activity: Expert Jigsaw	90 minutes
Closing: Top Ten Lists	30 minutes

Vaccination Investigation

Student Resource 1: Vaccination Article Packet

Expert Group 1

Polio Vaccine

Page 1 of 2

P

Poliomyelitis or polio is an infectious disease caused by a virus. It is spread by person-to-person contact. It enters the body through the mouth. It does not always cause serious illness, but in the most severe cases it can be fatal. The polio vaccine is the most effective way to prevent this disease.

According to information from the U.S. Centers for Disease Control and Prevention (CDC), a 1916 polio epidemic in the United States killed 6,000 people and paralyzed 27,000 more. In the early 1950's there were more than 20,000 cases of polio each year until the vaccination was introduced in 1955. From that point the number of cases each year began to drop. The first symptoms of polio are fever, sore throat, headache and a stiff neck. Polio has become very rare since the vaccine became available. The current version of the vaccine, which has been in place since 1987, protects 99% of children who receive a minimum of three doses. The U.S. was a leader in the success of the polio vaccine. Most other countries have eliminated polio as well. There are some areas of the world where the disease is still common. Until the disease has been completely eliminated we need to be vaccinated.

There are two types of vaccines for polio: a live oral vaccine that is swallowed (OPV – Oral Polio Vaccine) or a shot given in the arm or leg (IPV – Inactivated Polio Vaccine). Both vaccines give immunity to polio. Now that polio has been eradicated in the U.S., it is no longer necessary to use OPV. The polio shot is now the common method for vaccination. The most common age to receive the polio vaccine is as a young child. There are four doses provided throughout early childhood (2 months, 4 months, 6-18 months, and 4-6 years). The polio vaccine may be given at the same time as other vaccines. If the vaccine is not given in childhood, it is still effective when given to adults. In this case, three staggered doses would be given. There are three groups of adults considered high risk: people traveling to areas of the world where polio is common, laboratory workers who might handle the disease, and health care workers treating patients who might have polio. An adult fitting any of these three categories who was not vaccinated as a child should be vaccinated as an adult.

There are few side effects to the polio vaccine. Some people who get the shot get a sore spot where the shot is given. The vaccine used today has never been known to cause any serious problems, and most people don't have any problems at all with it. The risk of a polio shot causing serious harm, or death, is extremely small. One possible and rare side effect is a serious allergic reaction.

Vaccination Investigation

Student Resource 1: Vaccination Article Packet

Expert Group 1

Polio Vaccine

Page 2 of 2

According to the CDC, if we stopped vaccinating for polio:

“Stopping vaccination against polio will leave people susceptible to infection with the polio virus. Polio virus causes acute paralysis that can lead to permanent physical disability and even death. Before polio vaccine was available, 13,000 to 20,000 cases of paralytic polio were reported each year in the United States. These annual epidemics of polio often left thousands of victims--mostly children--in braces, crutches, wheelchairs, and iron lungs. The effects were life-long. In 1988 the World Health Assembly unanimously agreed to eradicate polio worldwide. As a result of global polio eradication efforts, the number of cases reported globally has decreased from more than 350,000 cases in 125 countries in 1988 to 2,000 cases of polio in 17 countries in 2006, and only four countries remain endemic (Afghanistan, India, Nigeria, Pakistan). To date polio has been eliminated from the Western hemisphere, and the European and Western Pacific regions. Stopping vaccination before eradication is achieved would result in a resurgence of the disease in the United States and worldwide.”

Vaccination Investigation

Student Resource 1: Vaccination Article Packet

Expert Group 2

MMR

Measles, Mumps, Rubella

Page 1 of 4

M

This vaccine prevents three diseases: measles, mumps, and rubella (German measles). The combined MMR vaccine was introduced to reduce the pain of three separate shots and to increase the likelihood that each vaccine will be given earlier (since they are given all at once).

Measles is a highly contagious disease caused by a virus. Symptoms include fever, cough, red eyes, and a runny nose. A rash begins with white spots in the mouth and develops into a red rash that covers the entire body. The rash typically lasts four to seven days. Severe cases of measles can cause diarrhea, ear infection, pneumonia, encephalitis (swelling of the brain), and death. The measles virus is highly contagious because it is spread through airborne droplets from coughing or sneezing. The virus can live in the air for up to two hours after an infected person leaves the area. After exposure, the virus lives in the body for about two weeks before symptoms appear. More than 20 million people around the world are infected with measles each year. Due to immunizations, fewer than 150 cases in the U.S. have been reported since 1997. Most cases were reported by someone who had traveled abroad. The MMR vaccine is the most effective way to prevent this disease.

Mumps is also a highly contagious disease caused by a virus. Symptoms include painful swollen salivary glands (under the jaw), fever, fatigue, sore muscles and a headache. In severe cases, mumps can lead to meningitis, encephalitis (swelling of the brain), or hearing loss. In rare cases, mumps can lead to sterility in males. The mumps virus is spread like measles; it too has a long incubation period, with symptoms appearing more than two weeks after contact. Due to the introduction of the mumps vaccine in 1967, reported mumps cases have declined to fewer than 1,000 per year in the U.S. The MMR Vaccine is the most effective way to prevent this disease.

Rubella is also known as German measles. It is a relatively mild disease caused by a virus. Symptoms include fever and rash. The most severe threat of rubella is to women who are pregnant. It can pass through a pregnant woman's bloodstream to infect her unborn child. In such cases, rubella can lead to birth defects causing deafness, cataracts, heart defects, mental retardation, and liver and/or spleen damage. As with mumps and measles, rubella is spread through airborne droplets from coughing or sneezing. People who have rubella are most contagious from one week before to one week after the rash appears. The MMR vaccine is the most effective way to prevent this disease

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MMR

Measles, Mumps, Rubella

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Before a vaccine against rubella became available in 1969, epidemics occurred every six to nine years in the U.S. Children ages five to nine were primarily affected. Due to immunization, there are now far fewer cases of rubella.

The most common way to receive the MMR vaccine is in two doses as a young child. The first dose is given after the first birthday (12 to 15 months of age). The second dose is given before the start of kindergarten (four to five years). Adults or teenagers should get the vaccine if they have not had the measles (a blood test for the antibodies can be given) or have not had MMR vaccine. Adults such as college students or health care workers are considered high-risk and are strongly encouraged to have the vaccine.

There are few side effects to the MMR vaccine. The risk of the MMR vaccine causing serious harm, or death, is extremely small. Getting the MMR vaccine is much safer than getting any of the three diseases. Mild side effects include fever, mild rash, or swelling of glands. In rare cases side effects may include seizure caused by fever, temporary pain or stiffness in the joints, or bleeding disorder. Very rare severe side effects include serious allergic reactions, deafness, long-term seizures, coma, or brain damage. (These side effects are so rare that experts cannot be sure whether they are caused by the vaccine or not.)

According to the CDC, if we stopped vaccinating for measles:

“Before measles immunization was available, nearly everyone in the U.S. got measles. An average of 450 measles-associated deaths were reported each year between 1953 and 1963. In the U.S., up to 20 percent of persons with measles are hospitalized. Seventeen percent of measles cases have had one or more complications, such as ear infections, pneumonia, or diarrhea. Pneumonia is present in about six percent of cases and accounts for most of the measles deaths. Although less common, some persons with measles develop encephalitis (swelling of the lining of the brain), resulting in brain damage. As many as three of every 1,000 persons with measles will die in the U.S. In the developing world, the rate is much higher, with death occurring in about one of every 100 persons with measles. Measles is one of the most infectious diseases in the world and is frequently imported into the U.S. In the period 1997-2000, most cases were associated with international visitors or U.S. residents who were exposed to the measles virus while traveling abroad. More than 90 percent of people who are not immune will get measles if they are exposed to the virus. According to the World Health Organization (WHO), nearly 900,000 measles-related deaths occurred among persons

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Measles, Mumps, Rubella

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in developing countries in 1999. In populations that are not immune to measles, measles spreads rapidly. If vaccinations were stopped, each year about 2.7 million measles deaths worldwide could be expected. In the U.S., widespread use of measles vaccine has led to a greater than 99 percent reduction in measles compared with the pre-vaccine era. If we stopped immunization, measles would increase to pre-vaccine levels."

According to the CDC, if we stopped vaccinating for mumps:

"Before the mumps vaccine was introduced, mumps was a major cause of deafness in children, occurring in approximately one in 20,000 reported cases. Mumps is usually a mild viral disease. However, rare conditions such as swelling of the brain, nerves and spinal cord can lead to serious side effects such as paralysis, seizures, and fluid in the brain. Serious side effects of mumps are more common among adults than children. Swelling of the testes is the most common side effect in males past the age of puberty, occurring in up to 20 percent to 50 percent of men who contract mumps. An increase in miscarriages has been found among women who develop mumps during the first trimester of pregnancy. An estimated 212,000 cases of mumps occurred in the U.S. in 1964. After vaccine licensure in 1967, reports of mumps decreased rapidly. In 1986 and 1987, there was a resurgence of mumps with 12,848 cases reported in 1987. Since 1989, the incidence of mumps has declined, with 266 reported cases in 2001. This recent decrease is probably due to the fact that children have received a second dose of mumps vaccine (part of the two-dose schedule for measles, mumps, rubella or MMR) and the eventual development of immunity in those who did not gain protection after the first mumps vaccination. We cannot let our guard down against mumps. A 2006 outbreak among college students, most of whom had received two doses of vaccine, led to over 5,500 cases in 15 states. Mumps is highly communicable and it only takes a few unvaccinated to initiate transmission."

According to the CDC, if we stopped vaccinating for rubella:

"While rubella is usually mild in children and adults, up to 90 percent of infants born to mothers infected with rubella during the first trimester of pregnancy will develop congenital rubella syndrome (CRS), resulting in heart defects, cataracts, mental retardation, and deafness. In 1964-1965, before rubella immunization was used routinely in the U.S., there was an epidemic of rubella that resulted in an estimated 20,000 infants born with CRS, with 2,100 neonatal deaths and 11,250 miscarriages. Of the 20,000 infants born with CRS, 11,600

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were deaf, 3,580 were blind, and 1,800 were mentally retarded. Due to the widespread use of rubella vaccine, only six CRS cases were provisionally reported in the U.S. in 2000. Because many developing countries do not include rubella in the childhood immunization schedule, many of these cases occurred in foreign-born adults. Since 1996, greater than 50 percent of the reported rubella cases have been among adults. Since 1999, there have been 40 pregnant women infected with rubella. If we stopped rubella immunization, immunity to rubella would decline and rubella would once again return, resulting in pregnant women becoming infected with rubella and then giving birth to infants with CRS.”

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DTaP Vaccine

Diphtheria, Tetanus, acellular Pertussis

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D

This vaccine prevents three diseases, diphtheria, tetanus, and pertussis. The combined DTaP vaccine was introduced to reduce the pain of three separate shots and to increase the likelihood that each vaccine will be given earlier (since they are given all at once). The “a” in DTaP stands for “acellular,” meaning that the pertussis component of the vaccine contains only a part of the pertussis organism.

Diphtheria is a serious bacterial disease that affects the respiratory system or the skin. Respiratory diphtheria causes a sore throat and fever, and sometimes swelling of the neck. In severe cases it can cause an airway obstruction as it causes a membrane (thin layer) to form over the throat, which results in breathing problems. When diphtheria affects the skin, infected lesions form. In severe cases, when untreated, diphtheria can lead to pneumonia, heart failure, paralysis, coma or death. Diphtheria bacteria are spread through airborne droplets from coughing or sneezing. The CDC states, “Before the 1920s, diphtheria was very common in the U.S., with hundreds of thousands of cases occurring every year. Since the introduction of a vaccine in the 1920s, cases of diphtheria in the U.S. have declined greatly, with less than one case reported each year since 2000. But while mandatory vaccines for schoolchildren have gone a long way toward controlling diphtheria in the U.S., the disease is still endemic in many developing countries.”

Tetanus is an infection caused by bacteria found in dirt, gravel and rusty metal. It usually enters the body through a cut. Symptoms include muscle spasms. If tetanus attacks the jaw muscles it causes lockjaw (the inability to open and close your mouth). In severe cases it can lead to breathing muscle spasms, which can be deadly.

Pertussis, also known as whooping cough, is a bacterium that clogs the lungs with mucus. Symptoms include a severe cough that sounds like a “whoop.” The cough can last for two months. It can lead to pneumonia.

Children should get five doses of DTaP, (two, four, six, and 15-18 months and four to six years). Adults and teenagers also need protection from diphtheria, tetanus, and pertussis. This vaccine should be given to any adult or teenager who was not vaccinated as a child. Td is a tetanus-diphtheria vaccine given to adolescents and adults as a booster shot every 10 years, or after an exposure to tetanus such as an injury. Tdap is similar to Td but it also contains protection against pertussis. A single dose of Tdap is recommended

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for adolescents 11 or 12 years-of-age, or in place of one Td booster in older adolescents and adults age 19 through 64.

There are few side effects to the DTaP vaccine. Getting diphtheria, tetanus or pertussis disease is much riskier than getting DTaP vaccine. Mild side effects include fever, redness/swelling/soreness/tenderness where the shot was given, fussiness, tiredness, poor appetite, or vomiting. After the fourth or fifth dose the entire arm or leg where the shot was given may swell. Rare side effects include seizure, excessive crying in babies, or very high fever. Very rare side effects include a serious allergic reaction, long-term seizures, coma, or brain damage. (These side effects are so rare, experts cannot be sure whether they are caused by the vaccine or not).

According to the CDC, if we stopped vaccinating for diphtheria:

“Diphtheria is a serious disease caused by a bacterium. This germ produces a poisonous substance or toxin which frequently causes heart and nerve problems. The case fatality rate is five percent to 10 percent, with higher case-fatality rates (up to 20 percent) in the very young and the elderly. In the 1920's, diphtheria was a major cause of illness and death for children in the U.S. In 1921, a total of 206,000 cases and 15,520 deaths were reported. With vaccine development in 1923, new cases of diphtheria began to fall in the U.S., until in 2001 only two cases were reported. Although diphtheria is rare in the U.S., it appears that the bacteria continue to get passed among people. In 1996, 10 isolates of the bacteria were obtained from persons in an American Indian community in South Dakota, none of whom had classic diphtheria disease. There was one death reported in 2003 from clinical diphtheria in a 63-year-old male who had never been vaccinated. There are high rates of susceptibility among adults. Screening tests conducted since 1977 have shown that 41 percent to 84 percent of adults 60 and over lack protective levels of circulating antitoxin against diphtheria. Although diphtheria is rare in the U.S., it is still a threat. Diphtheria is common in other parts of the world and with the increase in international travel, diphtheria and other infectious diseases are only a plane ride away. If we stopped immunization, the U.S. might experience a situation similar to the Newly Independent States of the former Soviet Union. With the breakdown of the public health services in this area, diphtheria epidemics began in 1990, fueled primarily by persons who were not properly vaccinated. From 1990-1999, more than 150,000 cases and 5,000 deaths were reported.”

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DTaP Vaccine

Diphtheria, Tetanus, acellular Pertussis

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According to the CDC, if we stopped vaccinating for tetanus:

“Tetanus is a severe, often fatal disease. The bacteria that cause tetanus are widely distributed in soil and street dust, are found in the waste of many animals, and are very resistant to heat and germ-killing cleaners. From 1922-1926, there were an estimated 1,314 cases of tetanus per year in the U.S. In the late 1940's, the tetanus vaccine was introduced, and tetanus became a disease that was officially counted and tracked by public health officials.

In 2000, only 41 cases of tetanus were reported in the U.S. People who get tetanus suffer from stiffness and spasms of the muscles. The larynx (throat) can close causing breathing and eating difficulties, muscle spasms can cause fractures (breaks) of the spine and long bones, and some people go into a coma and die.

Approximately 20 percent of reported cases end in death. Tetanus in the U.S. is primarily a disease of adults, but unvaccinated children and infants of unvaccinated mothers are also at risk for tetanus and neonatal tetanus, respectively. From 1995-1997, 33 percent of reported cases of tetanus occurred among persons 60 years of age or older and 60 percent occurred in patients greater than 40 years of age. The National Health Interview Survey found that in 1995, only 36 percent of adults 65 or older had received a tetanus vaccination during the preceding 10 years. Worldwide, tetanus in newborn infants continues to be a huge problem. Every year tetanus kills 300,000 newborns and 30,000 birth mothers who were not properly vaccinated. Even though the number of reported cases is low, an increased number of tetanus cases in younger persons have been observed recently in the U.S. among intravenous drug users, particularly heroin users. Tetanus is infectious, but not contagious, so unlike other vaccine-preventable diseases, immunization by members of the community will not protect others from the disease. Because tetanus bacteria are widespread in the environment, tetanus can only be prevented by immunization. If vaccination against tetanus were stopped, persons of all ages in the U.S. would be susceptible to this serious disease.”

According to the CDC, if we stopped vaccinating for pertussis:

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“Since the early 1980s, reported pertussis cases have been increasing, with peaks every three to four years; however, the number of reported cases remains much lower than levels seen in the pre-vaccine era. Compared with pertussis cases in other age groups, infants who are 6 months old or younger with pertussis experience the highest rate of hospitalization, pneumonia, seizures, encephalopathy (a degenerative disease of the brain) and death. From 1990 to 1996, 57 persons died from pertussis; 49 of these were less than six months old. Before pertussis immunizations were available, nearly all children developed whooping cough. In the U.S., prior to pertussis immunization, between 150,000 and 260,000 cases of pertussis were reported each year, with up to 9,000 pertussis-related deaths. Pertussis can be a severe illness, resulting in prolonged coughing spells that can last for many weeks. These spells can make it difficult for a child to eat, drink, and breathe. Because vomiting often occurs after a coughing spell, infants may lose weight and become dehydrated. In infants, it can also cause pneumonia and lead to brain damage, seizures, and mental retardation. The newer pertussis vaccine (acellular or DTaP) has been available for use in the United States since 1991 and has been recommended for exclusive use since 1998. These vaccines are effective and associated with fewer mild and moderate adverse reactions when compared with the older (whole-cell DTP) vaccines. During the 1970s, widespread concerns about the safety of the older pertussis vaccine led to a rapid fall in immunization levels in the United Kingdom. More than 100,000 cases and 36 deaths due to pertussis were reported during an epidemic in the mid 1970s. In Japan, pertussis vaccination coverage fell from 80 percent in 1974 to 20 percent in 1979. An epidemic occurred in 1979 and resulted in more than 13,000 cases and 41 deaths. Pertussis cases occur throughout the world. If we stopped pertussis immunizations in the U.S., we would experience a massive resurgence of pertussis disease. A recent study found that in eight countries where immunization coverage was reduced, incidence rates of pertussis surged to 10 to 100 times the rates in countries where vaccination rates were sustained.”

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Expert Group 4

Hepatitis B

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H

Hepatitis B is a virus that attacks the liver. Symptoms vary greatly from mild flu-like symptoms, tiredness, and poor appetite to nausea, vomiting, extreme tiredness, and jaundice (all the white parts on your body, like your eyes, teeth and nails, turn yellow). Symptoms may last for months. Hepatitis B can lead to liver damage, scarring, and/or failure. It is the number one cause of liver cancer. It can be fatal. Some people who are infected with hepatitis B become "carriers." They can spread the virus without knowing

they have it. Carriers are at higher risk of having liver failure later in life. There are several ways of spreading the virus: at birth - from an infected mother to her baby, coming in contact with the blood or bodily fluids of an infected person, living in the same household for a long time with someone who has hepatitis B virus, or injecting drugs with contaminated (dirty) needles. The hepatitis B vaccine is the most effective way to prevent this disease. Since hepatitis B can lead to liver cancer, this vaccine is significant because it was the first anti-cancer vaccine.

All children should get two doses of the hepatitis B vaccine (birth and 6-18 months). Children and adolescents through 18 years of age who did not get the vaccine when they were younger should also be vaccinated. All unvaccinated adults at risk for hepatitis B should be vaccinated. This includes adults having more than one sex partner; adults living in the same house as a person with hepatitis B virus infection; adults seeking care in a clinic for sexually transmitted diseases, HIV testing or treatment, or drug treatment; people with jobs that involve contact with human blood; or people who travel for more than six months a year in countries where hepatitis B is common.

There are few side effects to the hepatitis B vaccine. The risk of the hepatitis B vaccine causing serious harm or death is extremely small. Getting the hepatitis B vaccine is much safer than getting hepatitis B. Mild side effects include soreness where the shot was given and/or fever. In very rare cases a serious allergic reaction may develop.

According to the CDC, if we stopped vaccinating for hepatitis B:

"More than 2 billion persons worldwide have been infected with the hepatitis B virus at some time in their lives. Of these, 350 million are life-long carriers of the disease and can transmit the virus to others. One million of these people die each year from liver disease and liver cancer. National studies have shown that about 12.5 million Americans have been infected with hepatitis B virus at some point in their lifetime. One and one quarter

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Hepatitis B

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million Americans are estimated to have chronic (long-lasting) infection, of which 20 percent to 30 percent acquired their infection in childhood. Chronic hepatitis B virus infection increases a person's risk for chronic liver disease, cirrhosis, and liver cancer. About 5,000 persons will die each year from hepatitis B-related liver disease resulting in over \$700 million in medical and work loss costs. The number of new infections per year has declined from an average of 450,000 in the 1980s to about 80,000 in 1999. The greatest decline has occurred among children and adolescents due to routine hepatitis B vaccination. Infants and children who become infected with hepatitis B virus are at higher risk of developing lifelong infection, which often leads to death from liver disease (cirrhosis) and liver cancer. Approximately 25 percent of children who become infected with lifelong hepatitis B virus would be expected to die of related liver disease as adults. CDC estimates that one-third of the lifelong hepatitis B virus infections in the United States resulted from infections occurring in infants and young children. About 16,000 - 20,000 hepatitis B antigen infected women give birth each year in the United States. It is estimated that 12,000 children born to hepatitis B virus infected mothers were infected each year before the implementation of infant immunization programs. In addition, approximately 33,000 children (10 years of age and younger) of mothers who are not infected with hepatitis B virus were infected each year before routine recommendation of childhood hepatitis B vaccination."

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Varicella Vaccine

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V

Varicella is a virus also known as chickenpox. It causes an itchy rash and a fever. You can catch it from someone who already has it if you touch an open blister on that person's skin or if that person sneezes or coughs around you. Not everyone gets the vaccine, so a lot of kids still get chickenpox. Chickenpox vaccine is the best way to prevent chickenpox. The chickenpox vaccine is very effective: about eight to nine of every 10 people who are vaccinated are completely protected from chickenpox. If a vaccinated person does get chickenpox, it is usually a very mild case lasting only a few

days and involving less of a rash, mild or no fever, and few other symptoms. Children who have never had chickenpox are usually given two doses of the varicella vaccine (12 -15 months and four to six years of age) (it may be given earlier if at least three months after the first dose). People 13 years of age and older (who have never had chickenpox or received varicella vaccine) should get two doses at least 28 days apart. Children or adolescents who are not fully vaccinated should receive one or two doses of varicella vaccine.

There are few side effects from the varicella vaccine. Getting the vaccine is much safer than getting chickenpox. The risk of varicella vaccine causing serious harm, or death, is extremely small. Mild side effects are soreness or swelling where the shot was given, fever, or mild rash. Two rare side effects are seizures caused by fever and pneumonia. There are two extremely rare side effects: severe neurological problems and low blood count. (These side effects are so rare, experts cannot be sure whether they are caused by the vaccine or not.)

According to the CDC, if we stopped vaccinating for chickenpox:

“Prior to the licensing of the chickenpox vaccine in 1995, almost all persons in the United States had suffered from chickenpox by adulthood. Each year, the virus caused an estimated 4 million cases of chickenpox, 11,000 hospitalizations, and 100-150 deaths. A highly contagious disease, chickenpox is usually mild but can be severe in some persons. Infants, adolescents and adults, pregnant women, and immunocompromised persons are at particular risk for serious complications including secondary bacterial infections, loss of fluids (dehydration), pneumonia, and central nervous system involvement. The availability of the chickenpox vaccine and its subsequent widespread use has had a major impact on reducing cases of chickenpox and related morbidity, hospitalizations, and deaths. In some areas, cases have decreased as much as 90% over prevaccination numbers. In 2006, routine two-dose vaccination against chickenpox was recommended for all children,

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Varicella Vaccine

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adolescents, and adults who do not have evidence of immunity to the disease. In addition to further reducing cases, this strategy will also decrease the risk for exposure to the virus for persons who are unable to be vaccinated because of illness or other conditions and who may develop severe disease. If vaccination against chickenpox were to stop, the disease would eventually return to prevaccination rates, with virtually all susceptible persons becoming infected with the virus at some point in their lives.”

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HPV Vaccine

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H

HPV (human papillomavirus) is a common virus passed on through genital contact. HPV is the most common sexually transmitted virus in the United States. More than six million people get HPV each year, and most new infections are in 15–24 year olds. There are about 100 types of HPV, 40 of which can impact the genital areas of men and women.

Most types of HPV cause no symptoms and go away on their own. Some types of HPV can cause cervical cancer and other less common cancers as well. These types of HPV are known as high risk because they can last for many years and cause changes in the cells of the cervix. When left untreated, these cell changes can lead to cancer. Other types of HPV can cause warts (called genital warts) on the genital area of men and women. These types of HPV do not lead to cancer. The types of HPV that can cause cervical cancer are not the same as the types that can cause genital warts.

Anyone who has ever had genital contact with another person can get HPV. You do not need to have intercourse to spread HPV. Any skin-to-skin contact with the genital area of another person can allow HPV to spread. A person is more likely to get HPV if they have sex at an early age, have many sex partners, or have a sex partner who has had many partners. Since HPV often causes no symptoms, both men and women can have it and pass it on without knowing it.

There is no cure for HPV. There are treatment options for the health problems HPV causes such as genital warts and cervical cancer. Cervical cancer is a cancer that begins in a woman's cervix, the opening to the uterus or womb. Approximately 10,000 women each year in the U.S. will develop cervical cancer, and about 500,000 women will experience serious cervical lesions that may need treatment. Vaccination against HPV makes it much less likely that a woman will develop cervical cancer and other HPV related illnesses. There is currently one HPV vaccine on the market. Others are in development. The HPV vaccine is given in three doses to pre-teenage girls (11-12 years). The vaccine also is given to girls and women who have not been vaccinated (13-26 years). The HPV vaccine does not appear to cause any serious side effects. The mild side effects are pain, itching or swelling at the injection site, and fever. One very rare side effect of the HPV vaccine is an allergic reaction. Research shows that women who are already sexually active can still get some benefit from vaccination, but the vaccine protects best in females who have never been exposed to any type of HPV. Therefore, the vaccine is most effective in girls and young women who receive it before becoming sexually active.

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HPV (Human Papillomavirus)

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With early diagnosis, cervical cancer can be treated and cured. Because treatment is more successful with early detection, it is important for women to get regular Pap tests to detect any changes in the cervix caused by HPV. Doctors recommend that young women begin getting annual Pap tests three years after first sexual contact or at age 21 – whichever comes first.

Although men can get and transmit HPV to their sexual partners, there is currently no U.S. Food and Drug Administration (FDA) approved test to detect HPV in men. The agency states that "there is no clear health benefit to knowing if men have this virus, since HPV is unlikely to affect their health and cannot be treated. For most men, there would be no need to treat HPV, even if treatment were available, since it usually goes away on its own." However, research is ongoing to see how well vaccinating men against HPV may work in preventing HPV infection and diseases in men, and whether it can be an effective strategy for decreasing cervical cancer in women.

According to the CDC, we should vaccinate for HPV because:

"Approximately 20 million Americans are currently infected with HPV, and another 6.2 million people become newly infected each year. At least 50% of sexually active men and women acquire genital HPV infection at some point in their lives. About 1% of sexually active adults in the U.S. have genital warts at any one time. The American Cancer Society estimates that in 2008, 11,070 women will be diagnosed with cervical cancer in the U.S. Other HPV-related cancers are much less common than cervical cancer."

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Meningococcal Vaccine

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M

Meningococcal vaccination protects against most types of meningococcal disease. Meningococcal disease is a severe bacterial illness that can cause meningitis and blood infections (Meningococcal Bacteremia). Meningitis is an infection of the fluid of a person's spinal cord and the fluid that surrounds the brain. It is sometimes called spinal meningitis. Symptoms of meningitis are fever, headache, stiff neck, nausea, vomiting, and mental status changes. Meningitis is contagious. The bacteria are spread person to person through things like coughing, sneezing, or kissing. There is also a form of meningitis caused by a virus. The viral form is much less severe and usually resolves without treatment. There is no vaccine for viral meningitis.

Meningococcal disease affects 1,000 – 2,600 people each year. It can be a deadly disease, fatal to about every one out of 10 people who get it. Even with treatment, 10-15% die and 11-19% of those who live are severely impacted (loss of arms or legs, deafness, nervous system problems, mental disabilities, seizures, and stroke). Meningococcal disease can be treated with penicillin. The most effective way to prevent meningococcal disease is the meningococcal vaccine.

There are two kinds of vaccines. The vaccine given to adolescents is MCV4 (meningococcal conjugate vaccine). It prevents four types of meningococcal disease including the most common types in the U.S. MCV4 is given to young people at their preadolescent pediatrician visit (11 - 12 years). For anyone who has not yet been vaccinated, it is given before starting high school. Meningococcal vaccine is also given to other groups of people considered high risk due to certain medical conditions. College freshmen who live in dormitories and teenagers 15-19 are also considered high risk.

There are few side effects to the meningococcal vaccine. The risk of the meningococcal vaccine causing serious harm, or death, is extremely small. Getting the meningococcal vaccine is much safer than getting meningococcal disease. Mild side effects include redness or pain where the shot was given and fever. One possible side effect is an allergic reaction. One very rare, severe side effect is a nervous system disorder called GBS (Guillain-Barre Syndrome). This is so rare, experts cannot be sure whether the vaccine causes it or not.

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Meningococcal Vaccine

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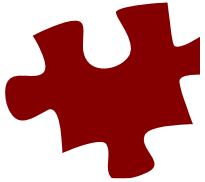
The following story illustrates why the meningococcal vaccination is so important:

The following excerpt is from a story originally published in the December 1, 1999, edition of *The Collegian* as "Ordinary College Student Shares Horror of Meningitis" by Ryan Hockensmith, who was then a senior at Penn State majoring in journalism and a staff writer for *The Collegian*. His story is reprinted with permission from the newspaper.

"The doctor was squeezing my toes hard. I could see his face clench up as he went from toe to toe, tightening two fingers around each of the toes on my left foot. To my horror, in the most excruciating few seconds of my life, I didn't feel anything. It's hard to express in words how I felt at that moment, how it feels to have someone grab a part of your body and not feel anything. It's terrifying. That was the end result of my three-week battle with meningococcal meningitis, a form of meningitis that claims [many] of its victims. I'm alive and well now, two weeks into a long recovery process. I will lose only those four toes I had no feeling in. But I look back now and wonder, why me? Meningitis only attacks a minuscule percentage of people every year, but a high percentage of those are college students. I am now a part of that statistic. If I had spent \$75 and gone ...for a meningitis vaccine like I should have last year, I wouldn't have to look at my body and nearly cry every day. Please make the most of your opportunity to avoid what happened to me."

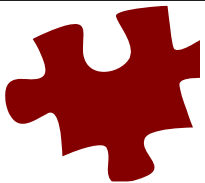
Vaccination Investigation

Student Resource 2: Expert Jigsaw Assignment Cards



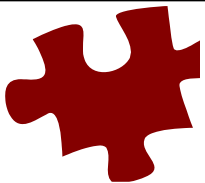
Expert Group 1
Read about ...

Polio Vaccine



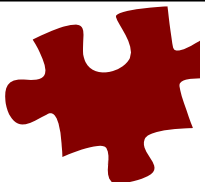
Expert Group 2
Read about ...

MMR Vaccine



Expert Group 3
Read about ...

DTaP Vaccine

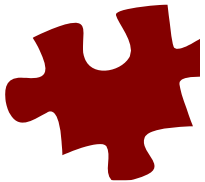


Expert Group 4
Read about ...

Hepatitis B Vaccine

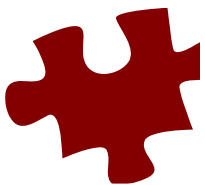
Vaccination Investigation

Student Resource 2: Expert Jigsaw Assignment Cards



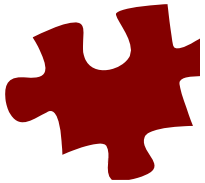
Expert Group 5
Read about ...

Varicella Vaccine



Expert Group 6
Read about ...

HPV Vaccine



Expert Group 7
Read about ...

Meningococcal Vaccine

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Student Resource 3: Vaccination Quick Write

Directions: Reflect on your use of summarizing skills for the Expert Jigsaw activity. Reflect on the knowledge gained for the topic of vaccines.

1. Good readers summarize what they have read. In this lesson you had to summarize what you read for the Jigsaw Activity because you had to become the expert for your part. What did you learn about the skill of summarizing? How might you use what you learned about summarizing in the future?

2. Beside each vaccine, list the disease(s) it prevents.

Polio	_____
MMR	_____
DTaP	_____
Hepatitis B	_____
Varicella	_____
HPV	_____
Meningococcal	_____

3. List one (or more) important fact(s) about each of the vaccines you learned about today.

Polio

MMR

DTaP

Hepatitis B

Varicella

HPV

Meningococcal

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Teacher Resource 1: Content Background and Resources

“Disease prevention is the key to public health. It is always better to prevent a disease than to treat it. Vaccines prevent disease in the people who receive them and protect those who come into contact with unvaccinated individuals. Vaccines help prevent infectious diseases and save lives. Vaccines are responsible for the control of many infectious diseases that were once common in this country, including polio, measles, diphtheria, pertussis (whooping cough), rubella (German measles), mumps, tetanus, and Haemophilus influenzae type b (Hib).

“Parents are constantly concerned about the health and safety of their children and take many steps to protect them. These steps range from child-proof door latches to child safety seats. In the same way, vaccines work to protect infants, children, and adults from illnesses and death caused by infectious diseases. While the US currently has record, or near record, low cases of vaccine-preventable diseases, the viruses and bacteria that cause them still exist. Even diseases that have been eliminated in this country, such as polio, are only a plane ride away. Polio, and other infectious diseases, can be passed on to people who are not protected by vaccines.

“Vaccine-preventable diseases have a costly impact, resulting in doctor's visits, hospitalizations, and premature deaths. Sick children can also cause parents to lose time from work.”

*Statement from the US Department of Health and Human Services
Centers for Disease Control and Prevention (CDC)*

What is a vaccine?

A vaccine is made from the antigen—either a bacteria or a virus—that causes the disease. Some vaccines use live or active but weakened versions of the antigen. Some are made from killed or inactive antigens, and others are made from parts of the antigen or one that closely resembles the targeted bacteria or virus. In any form, a vaccine does not contain enough antigens to cause the disease. It has just enough to trigger the body's immune system to produce antibodies against that disease. In most cases, these antibodies remain active and protective against the disease for a person's lifetime. This protection is called immunity. In some cases, a vaccine requires booster shots, doses given at regular intervals.

What are some common vaccines? When do children typically get them?

Explain that usually, children receive several vaccinations during the first 10 years of their lives, most of them before the age of one: polio, MMR (measles, mumps, rubella), DTaP (diphtheria, tetanus, pertussis), hepatitis B, varicella (chickenpox). CDC and the American Academy of Pediatrics (AAP) recommend that pre-teens get

Vaccination Investigation

Teacher Resource 1: Content Background and Resources

several vaccines at their 11 or 12-year-old check-up: tetanus-diphtheria-acellular pertussis vaccine (Tdap), meningococcal conjugate vaccine (MCV4), and human papillomavirus (HPV) vaccine for girls.

How do vaccines work? What does a vaccine do? How do vaccines prevent disease?

A weakened form of the disease germ is injected into the body. The body makes antibodies to fight these invaders. If and when the actual disease germs attack the body, the antibodies will still be there to destroy them.

What is an immune system? What is immunity?

Explain that the immune system is the body's method of protecting itself from foreign substances that invade the body. Vaccines work with our immune system to protect against diseases. A vaccine helps your body create antibodies, or cells that fight off antigens, and foreign substances like bacteria or viruses. Sometimes your body creates antibodies by itself, but not enough to fight a serious disease like polio. Immunity to a disease is achieved through the presence of antibodies to that disease in a person's system. Antibodies are proteins produced by the body to neutralize or destroy toxins or disease-carrying organisms. Antibodies are disease-specific. For example, measles antibody will protect a person who is exposed to measles disease, but will have no effect if he or she is exposed to mumps.

There are two types of immunity: active and passive. Active immunity results when exposure to a disease organism triggers the immune system to produce antibodies to that disease. Exposure to the disease organism can occur through infection with the actual disease (resulting in natural immunity), or introduction of a killed or weakened form of the disease organism through vaccination (vaccine-induced immunity). Either way, if an immune person comes into contact with that disease in the future, their immune system will recognize it and immediately produce the antibodies needed to fight it. Active immunity is long-lasting, and sometimes lifelong. Passive immunity is provided when a person is given antibodies to a disease rather than producing them through his or her own immune system. A newborn baby acquires passive immunity from its mother through the placenta. A person can also get passive immunity through antibody-containing blood products such as immune globulin, which may be given when immediate protection from a specific disease is needed. This is the major advantage to passive immunity; protection is immediate, whereas active immunity takes time (usually several weeks) to develop. However, passive immunity lasts only for a few weeks or months. Only active immunity is long-lasting.

What are the potential side effects of vaccinations?

While vaccines are very safe, like any medicine they do sometimes cause reactions. Mostly, these are mild "local" reactions (soreness or redness where the shot is given) or a low-grade fever. They may last a day or two and then go away. Sometimes more serious reactions are associated with vaccines. These are much less common. Some of them are clearly caused by the vaccine. Some have been reported after vaccination but are

Vaccination Investigation

Teacher Resource 1: Content Background and Resources

so rare that it is impossible to tell if they were caused by the vaccine or would have happened anyway. There is a very small risk that any vaccine could trigger a severe allergic reaction.

Why should vaccinations be required?

Immunizing individual children also helps to protect the health of our community, especially those people who are not immunized. People who are not immunized include those who are too young to be vaccinated (e.g., children less than a year old cannot receive the measles vaccine but can be infected by the measles virus), those who cannot be vaccinated for medical reasons (e.g., children with leukemia), and those who cannot make an adequate response to vaccination. Also protected, therefore, are people who received a vaccine, but who have not developed immunity. In addition, people who are sick will be less likely to be exposed to disease germs that can be passed around by unvaccinated children. Immunization also slows down or stops disease outbreaks.

To explore the concept of community disease prevention, Garrett Hardin's classic essay *The Tragedy of the Commons* describes the challenges presented when societal interest conflicts with the individual's interest. Hardin notes: *"...a community free of an infectious disease because of a high vaccination rate can be viewed as a common. The very existence of this common leads to tension between the best interests of the individual and those of the community. Increased immunization rates result in significantly decreased risk for disease. Although no remaining unimmunized individual can be said to be free of risk from the infectious disease, the herd effect generated from high immunization rates significantly reduces the risk for disease for those individuals. Additional benefit is conferred on the unimmunized person because avoidance of the vaccine avoids the risk for any adverse reactions associated with the vaccine. As disease rates drop, the risks associated with the vaccine come even more to the fore, providing further incentive to avoid immunization. Thus, when an individual in this common chooses to go unimmunized, it only minimally increases the risk of illness for that individual, while conferring on that person the benefit of avoiding the risk of vaccine induced side effects. At the same time, however, this action weakens the herd effect protection for the entire community. As more and more individuals choose to do what is in their 'best' individual interest, the common eventually fails as herd immunity disappears and disease outbreaks occur. To avoid this 'tragedy of the commons', legal requirements have been imposed by communities (in recent times, by states) to mandate particular vaccinations."*

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Teacher Resource 1: Content Background and Resources

WEB RESOURCES

Content Background

<http://www.cdc.gov/vaccines>

<http://www.cdc.gov/vaccines/vpd-vac/default.htm>

<http://kidshealth.org/parent/general/body/vaccine.html>

<http://www.vaccineinformation.org>

<http://www.cancer.org>

<http://www.neahin.org>

Vaccine Information Statements

<http://www.cdc.gov/vaccines/pubs/vis/default.htm>

Instructional Strategies

<http://www.jigsaw.org/>

Group Work Rubric

http://www.uen.org/Rubric/rubric.cgi?rubric_id=12916

Create your own rubric

<http://rubistar.4teachers.org/index.php>

Internet Safety

<http://www.bnetsavvy.org>

Vaccination Investigation

Teacher Resource 2: Lesson Vocabulary

antibody

Definition: A substance that fights a disease by protecting the body from a virus or bacteria.

Context: Vaccines cause the body to develop antibodies to fight a disease.

antigen

Definition: A substance such as bacteria or a virus that invades the body and stimulates the production of an antibody.

Context: Recognized as a threat by the immune system, an antigen, such as the streptococcus bacteria, triggers the production of an antibody.

bacteria

Definition: Simple one-celled organisms classified as prokaryotes.

Context: Although many bacteria live in the human body without causing harm, some cause tuberculosis, typhoid fever, whooping cough, and other diseases.

contagious

Definition: Capable of being transmitted by bodily contact with an infected person or object

Context: Measles is highly contagious, and infected people are usually contagious from about four days before their rash starts to four days afterwards.

endemic

Definition: The continual, low-level presence of disease in a community

Context: Cutaneous diphtheria is endemic in tropical countries but unusual in the United Kingdom.

herd immunity

Definition: Having a large percentage of the population vaccinated in order to prevent the spread of certain infectious diseases. Also known as community immunity.

Context: Herd immunity benefits individuals not vaccinated (such as newborns and those with chronic illnesses) because the disease has little opportunity to spread within the community.

immunity

Definition: Protection against a disease. There are two types of immunity, passive and active. Immunity is indicated by the presence of antibodies in the blood and can usually be determined with a laboratory test.

Context: Without evidence of immunity, it is beneficial to give the vaccine within three to five days of exposure.

Vaccination Investigation

Teacher Resource 2: Lesson Vocabulary

immunization

Definition: The process of protecting the body against disease using vaccines or serums.

Context: Most children begin their immunization schedule as babies and continue before they begin elementary and middle school.

incubation period

Definition: The time from contact with infectious agents (bacteria or viruses) to onset of disease.

Context: The typical incubation period for measles from exposure to rash onset is approximately 10 days.

infectious

Definition: Likely to spread to others. Capable of spreading disease. Also known as communicable.

Context: Measles is an infectious disease

vaccine

Definition: A substance that protects a body against a disease by causing the body's immune system to produce antibodies.

Context: Some vaccines provide lifelong protection against infection, while others require several doses given at regular intervals.

virus

Definition: An infectious agent that lives in a cell of another living thing.

Context: Viruses are a major cause of disease and can infect human beings with measles, influenza, and the common cold.

Vaccination Investigation

Teacher Resource 3: Instructional Strategy Overview

Expert Jigsaw Strategy

Jigsaw is a cooperative learning strategy. Teachers arrange students in groups called Home Groups. Each Home Group member is assigned a different piece of expert information related to the main topic. Home Group members join with members of other groups assigned the same piece of expert information. Students become experts on the topic by reading and/or researching. After reading/researching the given topic, the expert group members share ideas about the information and develop a teaching plan for the topic. Expert Group members return to their original Home Groups to teach each other about their topics. This strategy enables students to be responsible for learning and creates a deep understanding of the content. It also develops teamwork and cooperative learning skills. The Jigsaw Strategy can be modified to accommodate a wide variety of instructional needs for any content area.

Jigsaw secret: The number of students in each Home Group is equal to the number of reading sections for the topic. For example, if you are studying the five Great Lakes, you would create Home Groups of five students. Do not be concerned with the size of the Expert Groups. If you have a large class size, and the Expert Group size is too large, you can subdivide the Expert Group. Also, if you have “remainder” students, for example the class size is 32, you have six Home Groups (five in each group) and two students left over. Assign each of those remainder students to any of the Home Groups. The two Home Groups with the extra person can send two members to the same Expert Group.

Think-Pair-Share Strategy

Think-Pair-Share is a simple and powerful thinking structure. A problem or question is posed and students think alone about the question for a designated period of time. Next, students pair off to discuss the question or problem. Finally, students are called upon to share the ideas with the whole class. This strategy dramatically increases participation in class discussions. Research shows that the quality of student responses goes up significantly when you allow adequate think time. This strategy helps a teacher to make transitions during direct instruction. It is versatile because it can be used at any grade level, for any subject matter, and at any point during a lesson.

Think–Pair–Share secrets: Use an easy method to create partners to use at various times during instruction. Have students complete a partner hunt such as “Compass Partners”. Students go around the room and identify and record four partners on a recording sheet. They keep the sheet in their class notebook. When the teacher needs the students to find a partner, she or he can say, “Take out your Compass Partner card and sit beside your ‘North’ partner.” If a teacher would like to use assigned partners, he or she can pre-fill the “East” partner on each student’s card before beginning the partner hunt. Another time-saving hint is to have an attention-getting-signal in place in order to move the discussion along during the Think-Pair-Share.

Vaccination Investigation

Teacher Resource 4: Group Work Evaluation Rubric

Directions: Explain the rubric to the class before the activity begins. First, have students complete a self evaluation using the first Group Work Rubric on the sheet. Second, give the rubric to an “Expert” Group member to complete the second rubric. Finally, based on anecdotal observations, the teacher completes the third rubric on the page.

STUDENT NAME _____

SELF EVALUATION

Vaccine Jigsaw Activity	Point Total _____/20				Total
	1	2	3	4	
Prepared for the Expert Group meeting	never	rarely	often	always	
Prepared for the Home Group meeting	never	rarely	often	always	
Interacted, discussed, and posed questions	never	rarely	often	always	
Offered ideas and reported information	never	rarely	often	always	
Encouraged and supported teammates	never	rarely	often	always	

PEER EVALUATION

Vaccine Jigsaw Activity	Point Total _____/20				Total
	1	2	3	4	
Prepared for the Expert Group meeting	never	rarely	often	always	
Prepared for the Home Group meeting	never	rarely	often	always	
Interacted, discussed, and posed questions	never	rarely	often	always	
Offered ideas and reported information	never	rarely	often	always	
Encouraged and supported teammates	never	rarely	often	always	

TEACHER EVALUATION

Vaccine Jigsaw Activity	Point Total _____/20				Total
	1	2	3	4	
Prepared for the Expert Group meeting	never	rarely	often	always	
Prepared for the Home Group meeting	never	rarely	often	always	
Interacted, discussed, and posed questions	never	rarely	often	always	
Offered ideas and reported information	never	rarely	often	always	
Encouraged and supported teammates	never	rarely	often	always	

Evaluation Point Total _____/60

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Teacher Resource 5: Reference List

American Cancer Society <<http://www.cancer.org/docroot/home/index.asp>>

Hockensmith, Ryan. "Ordinary College Student Shares Horror of Meningitis." The Collegian 1 Dec. 1999 .

Immunization Action Coalition <<http://www.vaccineinformation.org/>>

Kagan, Spencer. (1992). *Cooperative Learning*. Resources for Teachers.

Kids Health Organization <<http://kidshealth.org>>

Murray, Bonnie P. (2002). *The New Teacher's Complete Sourcebook: Grades K-4*. Scholastic Books.

National Education Association Health Information Network <<http://www.neahin.org>>

Sexuality Information and Education Council of the United States <<http://www.siecus.org/index.cfm>>

Stanford University <<http://www.stanford.edu/group/arts/nicaragua/student/mural/glossary.html>>

U.S. Centers for Disease Control and Prevention <<http://www.cdc.gov/>>

U.S. Department of Health and Human Services <<http://www.hhs.gov/diseases/>>

Wong, Harry K. (1998). *The First Days of School: How to Be an Effective Teacher*. Harry K. Wong Publications Inc.

World Health Organization <www.who.org/>

Lesson Plan: Looking Back to Look Ahead – The History of Disease Prevention

Overview and Purpose: The purpose of this lesson is to provide students with an opportunity to learn about vaccines and disease prevention from a historical point of view. Students will learn about vaccines by researching historical time periods, creating a time line, and presenting their findings to other students.

Grade Level: Grades 9-12

Estimated Time Allotment: 5 class periods

(based on 50-minute class periods, with 45 minutes of instructional time for this lesson; specific durations of activities are provided within the Lesson Procedures section)

Curriculum Focus: Health, Science, Social Studies

Learning Objectives

The student will be able to...

- utilize prior knowledge to answer questions about vaccines
- research the development of vaccinations throughout history
- use a variety of resources to synthesize, create, and communicate what they have learned on a time line
- negotiate with peers to select key events
- collaborate with other students

Standards Addressed

Health

American Alliance for Health, Physical Education, Recreation and Dance (AAHPERD) and American Association for Health Education (AAHE), National Health Education Standards

Health Education Standard 1: Students will comprehend concepts related to health promotion and disease prevention

1.12.5. (9-12) Propose ways to reduce or prevent injuries and health problems

1.12.8. (9-12) Analyze personal susceptibility to injury, illness or death if engaging in unhealthy behaviors

Health Education Standard 3: Students will demonstrate the ability to access valid information and products and services to

3.12.2. (9-12) Use resources from home, school and community that provide valid health information

Lesson Plan: Looking Back to Look Ahead – The History of Disease Prevention

Health Education Standard 2: Students will analyze the influence of family, peers, culture, media, technology and other factors on health behavior

2.12.10. (9-12) Analyze how public health policies and government regulations can influence health promotion and disease prevention

Health Education Standard 8: Students will demonstrate the ability to advocate for personal, family and community health.

8.12.3. (9-12) Work cooperatively as an advocate for improving personal, family and community health

Mid-Continent Research for Education and Learning (McREL), Curriculum Standards for Health Education

Content Standard 2: Knows environmental and external factors that affect individual and community health

Level IV (Grade 9-12) Benchmark 4. Understands how the prevention and control of health problems are influenced by research and medical advances

Knowledge/skill statements

1. Understands how the prevention of health problems are influenced by research
2. Understands how the prevention of health problems are influenced by medical advances
3. Understands how the control of health problems are influenced by research
4. Understands how the control of health problems are influenced by medical advances

Content Standard 8: Knows essential concepts about the prevention and control of disease

Level IV (9-12) Benchmark 1. Understands how the immune system functions to prevent or combat disease

Knowledge/skill statements

1. Understands how the immune system functions to prevent disease
2. Understands how the immune system functions to combat disease

Curriculum Standards for Career Education/Health Education

Content Standard 9. Knows techniques to prevent the spread of illness and disease

Level IV (Grade 9-12) Benchmark 1. Knows the body's natural defense systems against infection such as barriers, the inflammatory response, and the immune response

Knowledge/skill statements

1. Knows the body's natural defense systems against infection
2. Understands the role of barriers as a natural defense against infection
3. Understands the inflammatory response as a natural defense against infection
4. Understands the immune response as a natural defense against infection

Content Standard 9. Knows techniques to prevent the spread of illness and disease

Lesson Plan: Looking Back to Look Ahead – The History of Disease Prevention

Level IV (Grade 9-12) Benchmark 2. Knows common infectious diseases present at school or home and details of the diseases (e.g., signs and symptoms, means of transmission, causative microorganism, recommendations to prevent the spread of the diseases)

Knowledge/skill statements

1. Knows common infectious diseases present at school or home
2. Knows details of common infectious diseases present at school or home
3. Knows the signs and symptoms of common infectious diseases
4. Knows how common infectious diseases are transmitted
5. Knows the microorganisms that cause common infectious diseases
6. Knows recommendations to prevent the spread of common infectious diseases

Science

National Science Education Standards, Science Content Standards

Content Standard C (Life Science): As a result of their activities in grades 9-12, all students should develop understanding of the behavior of organisms

Content Standard F (Science in Personal and Social Perspectives): As a result of activities in grades 9-12, all students should develop understanding of personal and community health

Social Studies

National Center for History in the Schools

Historical Thinking Standards (5-12)

Standard 1: Chronological Thinking

- A. Distinguish between past, present, and future time
- B. Identify the temporal structure of a historical narrative or story
- C. Establish temporal order in constructing historical narratives of their own
- D. Measure and calculate calendar time
- E. Interpret data presented in time lines and create time lines
- F. Reconstruct patterns of historical succession and duration; explain historical continuity and change

Standard 3: Historical Analysis and Interpretation

- A. Compare and contrast differing sets of ideas
- B. Consider multiple perspectives
- C. Analyze cause-and-effect relationships and multiple causation, including the importance of the individual, the influence of ideas
- D. Draw comparisons across eras and regions in order to define enduring issues
- E. Distinguish between unsupported expressions of opinion and informed hypotheses grounded in historical evidence
- J. Hypothesize the influence of the past

Standard 4: Historical Research Capabilities

Lesson Plan: Looking Back to Look Ahead – The History of Disease Prevention

- A. Formulate historical questions
- B. Obtain historical data from a variety of sources

Social Studies, Center for Civic Education, National Standards for Civics and Government
Content Standard K-12, V: What are the Roles of the Citizen in American
Democracy/What are important responsibilities of Americans

Social Studies, National Center for History in Schools
Historical Thinking Content Standard 3: Historical Analysis and Interpretation
C. Analyze cause-and-effect relationships and multiple causation, including the
importance of the individual, the influence of ideas

Curriculum Integrations

Reading and Language Arts, International Reading Association and National Council of
Teachers of English Standards, Standards for the English Language Arts

3: Students apply a wide range of strategies to comprehend, interpret, evaluate, and appreciate texts. They draw on their prior experience, their interactions with other readers and writers, their knowledge of word meaning and of other texts, their word identification strategies, and their understanding of textual features (e.g., sound-letter correspondence, sentence structure, context, graphics)

4: Students adjust their use of spoken, written, and visual language (e.g., conventions, style, vocabulary) to communicate effectively with a variety of audiences and for different purposes

5: Students employ a wide range of strategies as they write and use different writing process elements appropriately

to communicate with different audiences for a variety of purposes

6: Students apply knowledge of language structure, language conventions (e.g., spelling and punctuation), media techniques, figurative language, and genre to create, critique, and discuss print and nonprint texts

7: Students conduct research on issues and interests by generating ideas and questions, and by posing problems. They gather, evaluate, and synthesize data from a variety of sources (e.g., print and nonprint texts, artifacts, people) to communicate their discoveries in ways that suit their purpose and audience

8: Students use a variety of technological and information resources (e.g., libraries, databases, computer networks, video) to gather and synthesize information and to create and communicate knowledge

11: Students participate as knowledgeable, reflective, creative, and critical members of a variety of literacy communities

12: Students use spoken, written, and visual language to accomplish their own purposes (e.g., for learning, enjoyment, persuasion, and the exchange of information)

Lesson Procedures for Teacher

Before teaching the Lesson

Lesson Plan: Looking Back to Look Ahead – The History of Disease Prevention

Teacher Background: Content Background Resources, Lesson Vocabulary and Instructional Strategy Overview (Teacher Resources 1 - 3)

Teacher Preparation:

Materials and Planning Notes

Prepare for the students to work in small groups

Prepare for students to do Internet research (bookmark websites, test websites and links to be sure that the sites are not blocked or URL's have not changed) (Teacher Resource 1)

Prepare, Assemble and Review the Task Cards and Time Period Assignment Cards (Student Resources 1 and 2) (one per group)

Prepare, Assemble and Review the Vaccine Article Packets (Student Resource 3) (one per student)

Additional Materials: computers with Internet access, chart paper, markers, tape, butcher paper, scissors, glue, clip art, scrapbooking supplies, old magazines or catalogs (for students to cut apart – avoid magazines with inappropriate content)

During teaching of the Lesson

Opening Activity – Activate Prior Knowledge/Introduce the Topic 45 minutes

1. Read students the nursery rhyme Ring Around the Rosy (Teacher Resource 4). Ask students what they think this rhyme is about. Explain the historical context.
2. Survey the group, ask students when they think the first vaccine was invented and what it was for. Share smallpox story (Teacher Resource 4).
3. Ask students if they know about the most recent vaccine to come out. When and what? Share overview of HPV vaccine. (Teacher Resource 4)
4. Have a small group discussion activating prior knowledge about vaccines. Ask students if they know what vaccines are and how they work. Supplement the students' background knowledge by adding to the discussion. (Teacher Resource 1)
5. Introduce the term *epidemiology* and how it relates to the project. (Teacher Resource 2)
6. Introduce the term *historical context* and how it relates to this project. (Teacher Resource 2)
7. Introduce the Interactive Time Line project.

Learning Activities – Interactive Time Line Project 135 minutes

Lesson Plan: Looking Back to Look Ahead – The History of Disease Prevention

1. Have the students sit in small groups.
2. Explain the procedures and conduct the Interactive Time Line Project with the students:
 - Each group will be responsible for learning about an assigned block of time in history from the first vaccine (smallpox) through the most recent development (HPV Vaccine).
 - Students will be given a Task Sheet and Time Period Assignment Card (Student Resources 1 and 2).
 - Students will develop a “Learning Plan” for their group work.
 - Students will create the time line for their group’s time period using butcher paper, markers, glue, scrapbook materials, pictures from magazines, and clip art.
 - All of the time lines will be put together to form one huge time line around the room.
 - Each group will develop a presentation about their assigned time period.
3. Continue to contribute to the Interactive Time Line
 - Students will add personal accounts and living history to the time line. They will create family surveys to take home to see if there are any stories about their own family member(s) which may fit on the time line. Students will write the stories, and they will be placed around the time line with a piece of yarn connecting the time period (like a web).
 - Form new groups and assign each group an article from the Vaccine Article Packet (Student Resource 3). Read articles and add relevant information to the time line.
 - Conduct a Gallery Walk to view the whole time line.

Closing Activity – Stately Letters and Time Line Quiz Swap

45 minutes

1. Explain to students that they will be writing letters to local politicians, advocating for the continuing advancement of disease prevention, referring to the time line project to support the message. Use the Internet to identify a government official, politician or Head of State to direct the letter to.
2. Explain and conduct Time Line Quiz Swap
 - Groups will create quizzes based on their part of the time line.
 - Groups swap quizzes and complete the quizzes.
 - Groups meet to discuss answers.

Lesson Plan: Looking Back to Look Ahead – The History of Disease Prevention

Supplemental Materials

Resources to accompany this lesson plan have been created and are provided after this section. This lesson plan contains the following supplemental materials (as referenced throughout this section).

Student Resources

Student Resource 1: Historical Research Task Cards

Student Resource 2: Historical Research Time Period Assignment Cards

Student Resource 3: Vaccine Article Packet

Teacher Resources

Teacher Resource 1: Content Background and Resources for Vaccine Education

Teacher Resource 2: Lesson Vocabulary

Teacher Resource 3: Instructional Strategy Overview

Teacher Resource 4: Anecdotes

Teacher Resource 5: Group Work Evaluation Rubric

Teacher Resource 6: Reference List

Modifications

- For an independent or partner based project, assign each individual student a block of time, instead of small groups.

Assessment

- Assessment of Learning Process: Anecdotally observe students during class and small group discussion.
- Assessment of Group Skills: Informally observe students working together. If appropriate, use the Group Work Evaluation Rubric (Teacher Resource 5) or create your own.
- Assessment of Content Knowledge: Evaluate students' written work products from this lesson (Time Line Quiz Swap). Observe the students during presentations and information sharing.

After teaching the Lesson

Extension and Additional Activities (Take Home Component)

Lesson Plan: Looking Back to Look Ahead – The History of Disease Prevention

- Have a Time Line Open House, invite parents and community members to view the time line and listen to the students share what they have learned. Students can plan the party and plan activities for the guests to use the time line.
- Have the students continue to exchange quizzes with other groups and/or compile the quizzes into one for individual students to complete.

Lesson At – A – Glance

Opening: Activate Prior Knowledge and Introduce Lesson	45 minutes
Learning Activity: Interactive Time Line Project	135 minutes
Closing: Stately Letters and Time Line Quiz Swap	45 minutes

Looking Back to Look Ahead - The History of Disease Prevention

Student Resource 1: Task Cards

Historical Research Tasks

You must research the period of history you have been assigned using multiple sources, looking for key events during that time period (in the U.S. and worldwide) that somehow relate to or affected the advancement of vaccinations.

**You must include any vaccines that were discovered during your time period and any other relevant information.*

**You must include any discoveries and/or statistics about diseases during your time period.*

**You must include the following information in your time line:*

- One (or more) important/key scientific event(s) during your assigned time period*
- One (or more) important/key government or political event(s) during your assigned time period*
- One (or more) important/key social or “current” event(s) during your assigned time period*

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Student Resource 2: Time Period Assignment Cards

Group 1 - Time Period
1796 - 1826

Group 2 - Time Period
1827 - 1857

Group 3 - Time Period
1858 - 1888

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Student Resource 2: Time Period Assignment Cards

Group 4 - Time Period

1889 - 1929

Group 5 - Time Period

1930 - 1960

Group 6 - Time Period

1961 - 1981

Group 7 - Time Period

1982 - present

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Teacher Resource 1: Content Background and Resources

Expert Group 1

Polio Vaccine

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P

Poliomyelitis or polio is an infectious disease caused by a virus. It is spread by person-to-person contact. It enters the body through the mouth. It does not always cause serious illness, but in the most severe cases it can be fatal. The polio vaccine is the most effective way to prevent this disease.

According to information from the U.S. Centers for Disease Control and Prevention (CDC), a 1916 polio epidemic in the United States killed 6,000 people and paralyzed 27,000 more. In the early 1950's there were more than 20,000 cases of polio each year until the vaccination was introduced in 1955. From that point the number of cases each year began to drop. The first symptoms of polio are fever, sore throat, headache and a stiff neck. Polio has become very rare since the vaccine became available. The current version of the vaccine, which has been in place since 1987, protects 99% of children who receive a minimum of three doses. The U.S. was a leader in the success of the polio vaccine. Most other countries have eliminated polio as well. There are some areas of the world where the disease is still common. Until the disease has been completely eliminated we need to be vaccinated.

There are two types of vaccines for polio: a live oral vaccine that is swallowed (OPV – Oral Polio Vaccine) or a shot given in the arm or leg (IPV – Inactivated Polio Vaccine). Both vaccines give immunity to polio. Now that polio has been eradicated in the U.S., it is no longer necessary to use OPV. The polio shot is now the common method for vaccination. The most common age to receive the polio vaccine is as a young child. There are four doses provided throughout early childhood (2 months, 4 months, 6-18 months, and 4-6 years). The polio vaccine may be given at the same time as other vaccines. If the vaccine is not given in childhood, it is still effective when given to adults. In this case, three staggered doses would be given. There are three groups of adults considered high risk: people traveling to areas of the world where polio is common, laboratory workers who might handle the disease, and health care workers treating patients who might have polio. An adult fitting any of these three categories who was not vaccinated as a child should be vaccinated as an adult.

There are few side effects to the polio vaccine. Some people who get the shot get a sore spot where the shot is given. The vaccine used today has never been known to cause any serious problems, and most people don't have any problems at all with it. The risk of a polio shot causing serious harm, or death, is extremely small. One possible and rare side effect is a serious allergic reaction.

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Teacher Resource 1: Content Background and Resources

Expert Group 1

Polio Vaccine

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According to the CDC, if we stopped vaccinating for polio:

“Stopping vaccination against polio will leave people susceptible to infection with the polio virus. Polio virus causes acute paralysis that can lead to permanent physical disability and even death. Before polio vaccine was available, 13,000 to 20,000 cases of paralytic polio were reported each year in the United States. These annual epidemics of polio often left thousands of victims--mostly children--in braces, crutches, wheelchairs, and iron lungs. The effects were life-long. In 1988 the World Health Assembly unanimously agreed to eradicate polio worldwide. As a result of global polio eradication efforts, the number of cases reported globally has decreased from more than 350,000 cases in 125 countries in 1988 to 2,000 cases of polio in 17 countries in 2006, and only four countries remain endemic (Afghanistan, India, Nigeria, Pakistan). To date polio has been eliminated from the Western hemisphere, and the European and Western Pacific regions. Stopping vaccination before eradication is achieved would result in a resurgence of the disease in the United States and worldwide.”

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Teacher Resource 1: Content Background and Resources

Expert Group 2

MMR

M easles, M umps, R ubella

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M

This vaccine prevents three diseases: measles, mumps, and rubella (German measles). The combined MMR vaccine was introduced to reduce the pain of three separate shots and to increase the likelihood that each vaccine will be given earlier (since they are given all at once).

Measles is a highly contagious disease caused by a virus. Symptoms include fever, cough, red eyes, and a runny nose. A rash begins with white spots in the mouth and develops into a red rash that covers the entire body. The rash typically lasts four to seven days. Severe cases of measles can cause diarrhea, ear infection, pneumonia, encephalitis (swelling of the brain), and death. The measles virus is highly contagious because it is spread through airborne droplets from coughing or sneezing. The virus can live in the air for up to two hours after an infected person leaves the area. After exposure, the virus lives in the body for about two weeks before symptoms appear. More than 20 million people around the world are infected with measles each year. Due to immunizations, fewer than 150 cases in the U.S. have been reported since 1997. Most cases were reported by someone who had traveled abroad. The MMR vaccine is the most effective way to prevent this disease.

Mumps is also a highly contagious disease caused by a virus. Symptoms include painful swollen salivary glands (under the jaw), fever, fatigue, sore muscles and a headache. In severe cases, mumps can lead to meningitis, encephalitis (swelling of the brain), or hearing loss. In rare cases, mumps can lead to sterility in males. The mumps virus is spread like measles; it too has a long incubation period, with symptoms appearing more than two weeks after contact. Due to the introduction of the mumps vaccine in 1967, reported mumps cases have declined to fewer than 1,000 per year in the U.S. The MMR Vaccine is the most effective way to prevent this disease.

Rubella is also known as German measles. It is a relatively mild disease caused by a virus. Symptoms include fever and rash. The most severe threat of rubella is to women who are pregnant. It can pass through a pregnant woman's bloodstream to infect her unborn child. In such cases, rubella can lead to birth defects causing deafness, cataracts, heart defects, mental retardation, and liver and/or spleen damage. As with mumps and measles, rubella is spread through airborne droplets from coughing or sneezing. People who have rubella are most contagious from one week before to one week after the rash appears. The MMR vaccine is the most effective way to prevent this disease.

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Expert Group 2

MMR

Measles, Mumps, Rubella

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Before a vaccine against rubella became available in 1969, epidemics occurred every six to nine years in the U.S. Children ages five to nine were primarily affected. Due to immunization, there are now far fewer cases of rubella.

The most common way to receive the MMR vaccine is in two doses as a young child. The first dose is given after the first birthday (12 to 15 months of age). The second dose is given before the start of kindergarten (four to five years). Adults or teenagers should get the vaccine if they have not had the measles (a blood test for the antibodies can be given) or have not had MMR vaccine. Adults such as college students or health care workers are considered high-risk and are strongly encouraged to have the vaccine.

There are few side effects to the MMR vaccine. The risk of the MMR vaccine causing serious harm, or death, is extremely small. Getting the MMR vaccine is much safer than getting any of the three diseases. Mild side effects include fever, mild rash, or swelling of glands. In rare cases side effects may include seizure caused by fever, temporary pain or stiffness in the joints, or bleeding disorder. Very rare severe side effects include serious allergic reactions, deafness, long-term seizures, coma, or brain damage. (These side effects are so rare that experts cannot be sure whether they are caused by the vaccine or not.)

According to the CDC, if we stopped vaccinating for measles:

“Before measles immunization was available, nearly everyone in the U.S. got measles. An average of 450 measles-associated deaths were reported each year between 1953 and 1963. In the U.S., up to 20 percent of persons with measles are hospitalized. Seventeen percent of measles cases have had one or more complications, such as ear infections, pneumonia, or diarrhea. Pneumonia is present in about six percent of cases and accounts for most of the measles deaths. Although less common, some persons with measles develop encephalitis (swelling of the lining of the brain), resulting in brain damage. As many as three of every 1,000 persons with measles will die in the U.S. In the developing world, the rate is much higher, with death occurring in about one of every 100 persons with measles. Measles is one of the most infectious diseases in the world and is frequently imported into the U.S. In the period 1997-2000, most cases were associated with international visitors or U.S. residents who were exposed to the measles virus while traveling abroad. More than 90 percent of people who are not immune will get measles if they are exposed to the virus. According to the World Health Organization (WHO), nearly 900,000 measles-related deaths occurred among persons

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Expert Group 2

MMR

Measles, Mumps, Rubella

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in developing countries in 1999. In populations that are not immune to measles, measles spreads rapidly. If vaccinations were stopped, each year about 2.7 million measles deaths worldwide could be expected. In the U.S., widespread use of measles vaccine has led to a greater than 99 percent reduction in measles compared with the pre-vaccine era. If we stopped immunization, measles would increase to pre-vaccine levels.”

According to the CDC, if we stopped vaccinating for mumps:

“Before the mumps vaccine was introduced, mumps was a major cause of deafness in children, occurring in approximately one in 20,000 reported cases. Mumps is usually a mild viral disease. However, rare conditions such as swelling of the brain, nerves and spinal cord can lead to serious side effects such as paralysis, seizures, and fluid in the brain. Serious side effects of mumps are more common among adults than children. Swelling of the testes is the most common side effect in males past the age of puberty, occurring in up to 20 percent to 50 percent of men who contract mumps. An increase in miscarriages has been found among women who develop mumps during the first trimester of pregnancy. An estimated 212,000 cases of mumps occurred in the U.S. in 1964. After vaccine licensure in 1967, reports of mumps decreased rapidly. In 1986 and 1987, there was a resurgence of mumps with 12,848 cases reported in 1987. Since 1989, the incidence of mumps has declined, with 266 reported cases in 2001. This recent decrease is probably due to the fact that children have received a second dose of mumps vaccine (part of the two-dose schedule for measles, mumps, rubella or MMR) and the eventual development of immunity in those who did not gain protection after the first mumps vaccination. We cannot let our guard down against mumps. A 2006 outbreak among college students, most of whom had received two doses of vaccine, led to over 5,500 cases in 15 states. Mumps is highly communicable and it only takes a few unvaccinated to initiate transmission.”

According to the CDC, if we stopped vaccinating for rubella:

“While rubella is usually mild in children and adults, up to 90 percent of infants born to mothers infected with rubella during the first trimester of pregnancy will develop congenital rubella syndrome (CRS), resulting in heart defects, cataracts, mental retardation, and deafness. In 1964-1965, before rubella immunization was used routinely in the U.S., there was an epidemic of rubella that resulted in an estimated 20,000 infants born with CRS, with 2,100 neonatal deaths and 11,250 miscarriages. Of the 20,000 infants born with CRS, 11,600

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Expert Group 2

MMR

Measles, Mumps, Rubella

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were deaf, 3,580 were blind, and 1,800 were mentally retarded. Due to the widespread use of rubella vaccine, only six CRS cases were provisionally reported in the U.S. in 2000. Because many developing countries do not include rubella in the childhood immunization schedule, many of these cases occurred in foreign-born adults. Since 1996, greater than 50 percent of the reported rubella cases have been among adults. Since 1999, there have been 40 pregnant women infected with rubella. If we stopped rubella immunization, immunity to rubella would decline and rubella would once again return, resulting in pregnant women becoming infected with rubella and then giving birth to infants with CRS.”

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Teacher Resource 1: Content Background and Resources

Expert Group 3

DTaP Vaccine

*D*iphtheria, *T*etanus, *a*cellular *P*ertussis

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D

This vaccine prevents three diseases, diphtheria, tetanus, and pertussis. The combined DTaP vaccine was introduced to reduce the pain of three separate shots and to increase the likelihood that each vaccine will be given earlier (since they are given all at once). The “a” in DTaP stands for “acellular,” meaning that the pertussis component of the vaccine contains only a part of the pertussis organism.

Diphtheria is a serious bacterial disease that affects the respiratory system or the skin. Respiratory diphtheria causes a sore throat and fever, and sometimes swelling of the neck. In severe cases it can cause an airway obstruction as it causes a membrane (thin layer) to form over the throat, which results in breathing problems. When diphtheria affects the skin, infected lesions form. In severe cases, when untreated, diphtheria can lead to pneumonia, heart failure, paralysis, coma or death. Diphtheria bacteria are spread through airborne droplets from coughing or sneezing. The CDC states, “Before the 1920s, diphtheria was very common in the U.S., with hundreds of thousands of cases occurring every year. Since the introduction of a vaccine in the 1920s, cases of diphtheria in the U.S. have declined greatly, with less than one case reported each year since 2000. But while mandatory vaccines for schoolchildren have gone a long way toward controlling diphtheria in the U.S., the disease is still endemic in many developing countries.”

Tetanus is an infection caused by bacteria found in dirt, gravel and rusty metal. It usually enters the body through a cut. Symptoms include muscle spasms. If tetanus attacks the jaw muscles it causes lockjaw (the inability to open and close your mouth). In severe cases it can lead to breathing muscle spasms, which can be deadly.

Pertussis, also known as whooping cough, is a bacterium that clogs the lungs with mucus. Symptoms include a severe cough that sounds like a “whoop.” The cough can last for two months. It can lead to pneumonia.

Children should get five doses of DTaP, (two, four, six, and 15-18 months and four to six years). Adults and teenagers also need protection from diphtheria, tetanus, and pertussis. This vaccine should be given to any adult or teenager who was not vaccinated as a child. Td is a tetanus-diphtheria vaccine given to adolescents and adults as a booster shot every 10 years, or after an exposure to tetanus such as an injury. Tdap is similar to Td but it also contains protection against pertussis. A single dose of Tdap is recommended for adolescents

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Expert Group 3

DTaP Vaccine

Diphtheria, Tetanus, acellular Pertussis

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11 or 12 years-of-age, or in place of one Td booster in older adolescents and adults age 19 through 64.

There are few side effects to the DTaP vaccine. Getting diphtheria, tetanus or pertussis disease is much riskier than getting DTaP vaccine. Mild side effects include fever, redness/swelling/soreness/tenderness where the shot was given, fussiness, tiredness, poor appetite, or vomiting. After the fourth or fifth dose the entire arm or leg where the shot was given may swell. Rare side effects include seizure, excessive crying in babies, or very high fever. Very rare side effects include a serious allergic reaction, long-term seizures, coma, or brain damage. (These side effects are so rare, experts cannot be sure whether they are caused by the vaccine or not).

According to the CDC, if we stopped vaccinating for diphtheria:

“Diphtheria is a serious disease caused by a bacterium. This germ produces a poisonous substance or toxin which frequently causes heart and nerve problems. The case fatality rate is five percent to 10 percent, with higher case-fatality rates (up to 20 percent) in the very young and the elderly. In the 1920's, diphtheria was a major cause of illness and death for children in the U.S. In 1921, a total of 206,000 cases and 15,520 deaths were reported. With vaccine development in 1923, new cases of diphtheria began to fall in the U.S., until in 2001 only two cases were reported. Although diphtheria is rare in the U.S., it appears that the bacteria continue to get passed among people. In 1996, 10 isolates of the bacteria were obtained from persons in an American Indian community in South Dakota, none of whom had classic diphtheria disease. There was one death reported in 2003 from clinical diphtheria in a 63-year-old male who had never been vaccinated. There are high rates of susceptibility among adults. Screening tests conducted since 1977 have shown that 41 percent to 84 percent of adults 60 and over lack protective levels of circulating antitoxin against diphtheria. Although diphtheria is rare in the U.S., it is still a threat. Diphtheria is common in other parts of the world and with the increase in international travel, diphtheria and other infectious diseases are only a plane ride away. If we stopped immunization, the U.S. might experience a situation similar to the Newly Independent States of the former Soviet Union. With the breakdown of the public health services in this area, diphtheria epidemics began in 1990, fueled primarily by persons who were not properly vaccinated. From 1990-1999, more than 150,000 cases and 5,000 deaths were reported.”

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Expert Group 3

DTaP Vaccine

Diphtheria, Tetanus, acellular Pertussis

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According to the CDC, if we stopped vaccinating for tetanus:

“Tetanus is a severe, often fatal disease. The bacteria that cause tetanus are widely distributed in soil and street dust, are found in the waste of many animals, and are very resistant to heat and germ-killing cleaners. From 1922-1926, there were an estimated 1,314 cases of tetanus per year in the U.S. In the late 1940's, the tetanus vaccine was introduced, and tetanus became a disease that was officially counted and tracked by public health officials.

In 2000, only 41 cases of tetanus were reported in the U.S. People who get tetanus suffer from stiffness and spasms of the muscles. The larynx (throat) can close causing breathing and eating difficulties, muscle spasms can cause fractures (breaks) of the spine and long bones, and some people go into a coma and die.

Approximately 20 percent of reported cases end in death. Tetanus in the U.S. is primarily a disease of adults, but unvaccinated children and infants of unvaccinated mothers are also at risk for tetanus and neonatal tetanus, respectively. From 1995-1997, 33 percent of reported cases of tetanus occurred among persons 60 years of age or older and 60 percent occurred in patients greater than 40 years of age. The National Health Interview Survey found that in 1995, only 36 percent of adults 65 or older had received a tetanus vaccination during the preceding 10 years. Worldwide, tetanus in newborn infants continues to be a huge problem. Every year tetanus kills 300,000 newborns and 30,000 birth mothers who were not properly vaccinated. Even though the number of reported cases is low, an increased number of tetanus cases in younger persons have been observed recently in the U.S. among intravenous drug users, particularly heroin users. Tetanus is infectious, but not contagious, so unlike other vaccine-preventable diseases, immunization by members of the community will not protect others from the disease. Because tetanus bacteria are widespread in the environment, tetanus can only be prevented by immunization. If vaccination against tetanus were stopped, persons of all ages in the U.S. would be susceptible to this serious disease.”

According to the CDC, if we stopped vaccinating for pertussis:

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Expert Group 3

DTaP Vaccine

Diphtheria, Tetanus, acellular Pertussis

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“Since the early 1980s, reported pertussis cases have been increasing, with peaks every three to four years; however, the number of reported cases remains much lower than levels seen in the pre-vaccine era. Compared with pertussis cases in other age groups, infants who are 6 months old or younger with pertussis experience the highest rate of hospitalization, pneumonia, seizures, encephalopathy (a degenerative disease of the brain) and death. From 1990 to 1996, 57 persons died from pertussis; 49 of these were less than six months old. Before pertussis immunizations were available, nearly all children developed whooping cough. In the U.S., prior to pertussis immunization, between 150,000 and 260,000 cases of pertussis were reported each year, with up to 9,000 pertussis-related deaths. Pertussis can be a severe illness, resulting in prolonged coughing spells that can last for many weeks. These spells can make it difficult for a child to eat, drink, and breathe. Because vomiting often occurs after a coughing spell, infants may lose weight and become dehydrated. In infants, it can also cause pneumonia and lead to brain damage, seizures, and mental retardation. The newer pertussis vaccine (acellular or DTaP) has been available for use in the United States since 1991 and has been recommended for exclusive use since 1998. These vaccines are effective and associated with fewer mild and moderate adverse reactions when compared with the older (whole-cell DTP) vaccines. During the 1970s, widespread concerns about the safety of the older pertussis vaccine led to a rapid fall in immunization levels in the United Kingdom. More than 100,000 cases and 36 deaths due to pertussis were reported during an epidemic in the mid 1970s. In Japan, pertussis vaccination coverage fell from 80 percent in 1974 to 20 percent in 1979. An epidemic occurred in 1979 and resulted in more than 13,000 cases and 41 deaths. Pertussis cases occur throughout the world. If we stopped pertussis immunizations in the U.S., we would experience a massive resurgence of pertussis disease. A recent study found that in eight countries where immunization coverage was reduced, incidence rates of pertussis surged to 10 to 100 times the rates in countries where vaccination rates were sustained.”

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Teacher Resource 1: Content Background and Resources

Expert Group 4

Hepatitis B

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H

Hepatitis B is a virus that attacks the liver. Symptoms vary greatly from mild flu-like symptoms, tiredness, and poor appetite to nausea, vomiting, extreme tiredness, and jaundice (all the white parts on your body, like your eyes, teeth and nails, turn yellow). Symptoms may last for months. Hepatitis B can lead to liver damage, scarring, and/or failure. It is the number one cause of liver cancer. It can be fatal. Some people who are infected with hepatitis B become "carriers." They can spread the virus without knowing

they have it. Carriers are at higher risk of having liver failure later in life. There are several ways of spreading the virus: at birth - from an infected mother to her baby, coming in contact with the blood or bodily fluids of an infected person, living in the same household for a long time with someone who has hepatitis B virus, or injecting drugs with contaminated (dirty) needles. The hepatitis B vaccine is the most effective way to prevent this disease. Since hepatitis B can lead to liver cancer, this vaccine is significant because it was the first anti-cancer vaccine.

All children should get two doses of the hepatitis B vaccine (birth and 6-18 months). Children and adolescents through 18 years of age who did not get the vaccine when they were younger should also be vaccinated. All unvaccinated adults at risk for hepatitis B should be vaccinated. This includes adults having more than one sex partner; adults living in the same house as a person with hepatitis B virus infection; adults seeking care in a clinic for sexually transmitted diseases, HIV testing or treatment, or drug treatment; people with jobs that involve contact with human blood; or people who travel for more than six months a year in countries where hepatitis B is common.

There are few side effects to the hepatitis B vaccine. The risk of the hepatitis B vaccine causing serious harm or death is extremely small. Getting the hepatitis B vaccine is much safer than getting hepatitis B. Mild side effects include soreness where the shot was given and/or fever. In very rare cases a serious allergic reaction may develop.

According to the CDC, if we stopped vaccinating for hepatitis B:

"More than 2 billion persons worldwide have been infected with the hepatitis B virus at some time in their lives. Of these, 350 million are life-long carriers of the disease and can transmit the virus to others. One million of these people die each year from liver disease and liver cancer. National studies have shown that about 12.5 million Americans have been infected with hepatitis B virus at some point in their lifetime. One and one quarter

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Expert Group 4

Hepatitis B

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million Americans are estimated to have chronic (long-lasting) infection, of which 20 percent to 30 percent acquired their infection in childhood. Chronic hepatitis B virus infection increases a person's risk for chronic liver disease, cirrhosis, and liver cancer. About 5,000 persons will die each year from hepatitis B-related liver disease resulting in over \$700 million in medical and work loss costs. The number of new infections per year has declined from an average of 450,000 in the 1980s to about 80,000 in 1999. The greatest decline has occurred among children and adolescents due to routine hepatitis B vaccination. Infants and children who become infected with hepatitis B virus are at higher risk of developing lifelong infection, which often leads to death from liver disease (cirrhosis) and liver cancer. Approximately 25 percent of children who become infected with lifelong hepatitis B virus would be expected to die of related liver disease as adults. CDC estimates that one-third of the lifelong hepatitis B virus infections in the United States resulted from infections occurring in infants and young children. About 16,000 - 20,000 hepatitis B antigen infected women give birth each year in the United States. It is estimated that 12,000 children born to hepatitis B virus infected mothers were infected each year before the implementation of infant immunization programs. In addition, approximately 33,000 children (10 years of age and younger) of mothers who are not infected with hepatitis B virus were infected each year before routine recommendation of childhood hepatitis B vaccination."

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Teacher Resource 1: Content Background and Resources

Expert Group 5

Varicella Vaccine

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V

Varicella is a virus also known as chickenpox. It causes an itchy rash and a fever. You can catch it from someone who already has it if you touch an open blister on that person's skin or if that person sneezes or coughs around you. Not everyone gets the vaccine, so a lot of kids still get chickenpox. Chickenpox vaccine is the best way to prevent chickenpox. The chickenpox vaccine is very effective: about eight to nine of every 10 people who are vaccinated are completely protected from chickenpox. If a vaccinated person does get chickenpox, it is usually a very mild case lasting only a few days and involving less of a rash, mild or no fever, and few other symptoms. Children who have never had chickenpox are usually given two doses of the varicella vaccine (12 -15 months and four to six years of age) (it may be given earlier if at least three months after the first dose). People 13 years of age and older (who have never had chickenpox or received varicella vaccine) should get two doses at least 28 days apart. Children or adolescents who are not fully vaccinated should receive one or two doses of varicella vaccine.

There are few side effects from the varicella vaccine. Getting the vaccine is much safer than getting chickenpox. The risk of varicella vaccine causing serious harm, or death, is extremely small. Mild side effects are soreness or swelling where the shot was given, fever, or mild rash. Two rare side effects are seizures caused by fever and pneumonia. There are two extremely rare side effects: severe neurological problems and low blood count. (These side effects are so rare, experts cannot be sure whether they are caused by the vaccine or not.)

According to the CDC, if we stopped vaccinating for chickenpox:

“Prior to the licensing of the chickenpox vaccine in 1995, almost all persons in the United States had suffered from chickenpox by adulthood. Each year, the virus caused an estimated 4 million cases of chickenpox, 11,000 hospitalizations, and 100-150 deaths. A highly contagious disease, chickenpox is usually mild but can be severe in some persons. Infants, adolescents and adults, pregnant women, and immunocompromised persons are at particular risk for serious complications including secondary bacterial infections, loss of fluids (dehydration), pneumonia, and central nervous system involvement. The availability of the chickenpox vaccine and its subsequent widespread use has had a major impact on reducing cases of chickenpox and related morbidity, hospitalizations, and deaths. In some areas, cases have decreased as much as 90% over prevaccination numbers. In 2006, routine two-dose vaccination against chickenpox was recommended for all children,

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Expert Group 5

Varicella Vaccine

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adolescents, and adults who do not have evidence of immunity to the disease. In addition to further reducing cases, this strategy will also decrease the risk for exposure to the virus for persons who are unable to be vaccinated because of illness or other conditions and who may develop severe disease. If vaccination against chickenpox were to stop, the disease would eventually return to prevaccination rates, with virtually all susceptible persons becoming infected with the virus at some point in their lives.”

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Teacher Resource 1: Content Background and Resources

Expert Group 6

HPV Vaccine

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H

HPV (human papillomavirus) is a common virus passed on through genital contact. HPV is the most common sexually transmitted virus in the United States. More than six million people get HPV each year, and most new infections are in 15–24 year olds. There are about 100 types of HPV, 40 of which can impact the genital areas of men and women.

Most types of HPV cause no symptoms and go away on their own. Some types of HPV can cause cervical cancer and other less common cancers as well. These types of HPV are known as high risk because they can last for many years and cause changes in the cells of the cervix. When left untreated, these cell changes can lead to cancer. Other types of HPV can cause warts (called genital warts) on the genital area of men and women. These types of HPV do not lead to cancer. The types of HPV that can cause cervical cancer are not the same as the types that can cause genital warts.

Anyone who has ever had genital contact with another person can get HPV. You do not need to have intercourse to spread HPV. Any skin-to-skin contact with the genital area of another person can allow HPV to spread. A person is more likely to get HPV if they have sex at an early age, have many sex partners, or have a sex partner who has had many partners. Since HPV often causes no symptoms, both men and women can have it and pass it on without knowing it.

There is no cure for HPV. There are treatment options for the health problems HPV causes such as genital warts and cervical cancer. Cervical cancer is a cancer that begins in a woman's cervix, the opening to the uterus or womb. Approximately 10,000 women each year in the U.S. will develop cervical cancer, and about 500,000 women will experience serious cervical lesions that may need treatment. Vaccination against HPV makes it much less likely that a woman will develop cervical cancer and other HPV related illnesses. There is currently one HPV vaccine on the market. Others are in development. The HPV vaccine is given in three doses to pre-teenage girls (11-12 years). The vaccine also is given to girls and women who have not been vaccinated (13-26 years). The HPV vaccine does not appear to cause any serious side effects. The mild side effects are pain, itching or swelling at the injection site, and fever. One very rare side effect of the HPV vaccine is an allergic reaction. Research shows that women who are already sexually active can still get some benefit from vaccination, but the vaccine protects best in females who have never been exposed to any type of HPV. Therefore, the vaccine is most effective in girls and young women who receive it before becoming sexually active.

Looking Back to Look Ahead - The History of Disease Prevention

Teacher Resource 1: Content Background and Resources

Expert Group 6

HPV (Human Papillomavirus)

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With early diagnosis, cervical cancer can be treated and cured. Because treatment is more successful with early detection, it is important for women to get regular Pap tests to detect any changes in the cervix caused by HPV. Doctors recommend that young women begin getting annual Pap tests three years after first sexual contact or at age 21 – whichever comes first.

Although men can get and transmit HPV to their sexual partners, there is currently no U.S. Food and Drug Administration (FDA) approved test to detect HPV in men. The agency states that "there is no clear health benefit to knowing if men have this virus, since HPV is unlikely to affect their health and cannot be treated. For most men, there would be no need to treat HPV, even if treatment were available, since it usually goes away on its own." However, research is ongoing to see how well vaccinating men against HPV may work in preventing HPV infection and diseases in men, and whether it can be an effective strategy for decreasing cervical cancer in women.

According to the CDC, we should vaccinate for HPV because:

"Approximately 20 million Americans are currently infected with HPV, and another 6.2 million people become newly infected each year. At least 50% of sexually active men and women acquire genital HPV infection at some point in their lives. About 1% of sexually active adults in the U.S. have genital warts at any one time. The American Cancer Society estimates that in 2008, 11,070 women will be diagnosed with cervical cancer in the U.S. Other HPV-related cancers are much less common than cervical cancer."

Looking Back to Look Ahead - The History of Disease Prevention

Teacher Resource 1: Content Background and Resources

Expert Group 7

Meningococcal Vaccine

Page 1 of 2

M

Meningococcal vaccination protects against most types of meningococcal disease. Meningococcal disease is a severe bacterial illness that can cause meningitis and blood infections (Meningococcal Bacteremia). Meningitis is an infection of the fluid of a person's spinal cord and the fluid that surrounds the brain. It is sometimes called spinal meningitis. Symptoms of meningitis are fever, headache, stiff neck, nausea, vomiting, and mental status changes. Meningitis is contagious. The bacteria are

spread person to person through things like coughing, sneezing, or kissing. There is also a form of meningitis caused by a virus. The viral form is much less severe and usually resolves without treatment. There is no vaccine for viral meningitis.

Meningococcal disease affects 1,000 – 2,600 people each year. It can be a deadly disease, fatal to about every one out of 10 people who get it. Even with treatment, 10-15% die and 11-19% of those who live are severely impacted (loss of arms or legs, deafness, nervous system problems, mental disabilities, seizures, and stroke). Meningococcal disease can be treated with penicillin. The most effective way to prevent meningococcal disease is the meningococcal vaccine.

There are two kinds of vaccines. The vaccine given to adolescents is MCV4 (meningococcal conjugate vaccine). It prevents four types of meningococcal disease including the most common types in the U.S. MCV4 is given to young people at their preadolescent pediatrician visit (11 - 12 years). For anyone who has not yet been vaccinated, it is given before starting high school. Meningococcal vaccine is also given to other groups of people considered high risk due to certain medical conditions. College freshmen who live in dormitories and teenagers 15-19 are also considered high risk.

There are few side effects to the meningococcal vaccine. The risk of the meningococcal vaccine causing serious harm, or death, is extremely small. Getting the meningococcal vaccine is much safer than getting meningococcal disease. Mild side effects include redness or pain where the shot was given and fever. One possible side effect is an allergic reaction. One very rare, severe side effect is a nervous system disorder called GBS (Guillain-Barre Syndrome). This is so rare, experts cannot be sure whether the vaccine causes it or not.

Looking Back to Look Ahead - The History of Disease Prevention

Teacher Resource 1: Content Background and Resources

Expert Group 7

Meningococcal Vaccine

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The following story illustrates why the meningococcal vaccination is so important:

The following excerpt is from a story originally published in the December 1, 1999, edition of *The Collegian* as "Ordinary College Student Shares Horror of Meningitis" by Ryan Hockensmith, who was then a senior at Penn State majoring in journalism and a staff writer for *The Collegian*. His story is reprinted with permission from the newspaper.

"The doctor was squeezing my toes hard. I could see his face clench up as he went from toe to toe, tightening two fingers around each of the toes on my left foot. To my horror, in the most excruciating few seconds of my life, I didn't feel anything. It's hard to express in words how I felt at that moment, how it feels to have someone grab a part of your body and not feel anything. It's terrifying. That was the end result of my three-week battle with meningococcal meningitis, a form of meningitis that claims [many] of its victims. I'm alive and well now, two weeks into a long recovery process. I will lose only those four toes I had no feeling in. But I look back now and wonder, why me? Meningitis only attacks a minuscule percentage of people every year, but a high percentage of those are college students. I am now a part of that statistic. If I had spent \$75 and gone ...for a meningitis vaccine like I should have last year, I wouldn't have to look at my body and nearly cry every day. Please make the most of your opportunity to avoid what happened to me."

Looking Back to Look Ahead - The History of Disease Prevention

Teacher Resource 1: Content Background and Resources

“Disease prevention is the key to public health. It is always better to prevent a disease than to treat it. Vaccines prevent disease in the people who receive them and protect those who come into contact with unvaccinated individuals. Vaccines help prevent infectious diseases and save lives. Vaccines are responsible for the control of many infectious diseases that were once common in this country, including polio, measles, diphtheria, pertussis (whooping cough), rubella (German measles), mumps, tetanus, and Haemophilus influenzae type b (Hib).

“Parents are constantly concerned about the health and safety of their children and take many steps to protect them. These steps range from child-proof door latches to child safety seats. In the same way, vaccines work to protect infants, children, and adults from illnesses and death caused by infectious diseases. While the US currently has record, or near record, low cases of vaccine-preventable diseases, the viruses and bacteria that cause them still exist. Even diseases that have been eliminated in this country, such as polio, are only a plane ride away. Polio, and other infectious diseases, can be passed on to people who are not protected by vaccines.

“Vaccine-preventable diseases have a costly impact, resulting in doctor's visits, hospitalizations, and premature deaths. Sick children can also cause parents to lose time from work.”

*Statement from the US Department of Health and Human Services
Centers for Disease Control and Prevention (CDC)*

What is a vaccine?

A vaccine is made from the antigen—either a bacteria or a virus—that causes the disease. Some vaccines use live or active but weakened versions of the antigen. Some are made from killed or inactive antigens, and others are made from parts of the antigen or one that closely resembles the targeted bacteria or virus. In any form, a vaccine does not contain enough antigens to cause the disease. It has just enough to trigger the body's immune system to produce antibodies against that disease. In most cases, these antibodies remain active and protective against the disease for a person's lifetime. This protection is called immunity. In some cases, a vaccine requires booster shots, doses given at regular intervals.

What are some common vaccines? When do children typically get them?

Explain that usually, children receive several vaccinations during the first 10 years of their lives, most of them before the age of one: polio, MMR (measles, mumps, rubella), DTaP (diphtheria, tetanus, pertussis), hepatitis B, varicella (chickenpox). CDC and the American Academy of Pediatrics (AAP) recommend that pre-teens get

Looking Back to Look Ahead - The History of Disease Prevention

Teacher Resource 1: Content Background and Resources

several vaccines at their 11 or 12-year-old check-up: tetanus-diphtheria-acellular pertussis vaccine (Tdap), meningococcal conjugate vaccine (MCV4), and human papillomavirus (HPV) vaccine for girls.

How do vaccines work? What does a vaccine do? How do vaccines prevent disease?

A weakened form of the disease germ is injected into the body. The body makes antibodies to fight these invaders. If and when the actual disease germs attack the body, the antibodies will still be there to destroy them.

What is an immune system? What is immunity?

Explain that the immune system is the body's method of protecting itself from foreign substances that invade the body. Vaccines work with our immune system to protect against diseases. A vaccine helps your body create antibodies, or cells that fight off antigens, and foreign substances like bacteria or viruses. Sometimes your body creates antibodies by itself, but not enough to fight a serious disease like polio. Immunity to a disease is achieved through the presence of antibodies to that disease in a person's system. Antibodies are proteins produced by the body to neutralize or destroy toxins or disease-carrying organisms. Antibodies are disease-specific. For example, measles antibody will protect a person who is exposed to measles disease, but will have no effect if he or she is exposed to mumps.

There are two types of immunity: active and passive. Active immunity results when exposure to a disease organism triggers the immune system to produce antibodies to that disease. Exposure to the disease organism can occur through infection with the actual disease (resulting in natural immunity), or introduction of a killed or weakened form of the disease organism through vaccination (vaccine-induced immunity). Either way, if an immune person comes into contact with that disease in the future, their immune system will recognize it and immediately produce the antibodies needed to fight it. Active immunity is long-lasting, and sometimes lifelong. Passive immunity is provided when a person is given antibodies to a disease rather than producing them through his or her own immune system. A newborn baby acquires passive immunity from its mother through the placenta. A person can also get passive immunity through antibody-containing blood products such as immune globulin, which may be given when immediate protection from a specific disease is needed. This is the major advantage to passive immunity; protection is immediate, whereas active immunity takes time (usually several weeks) to develop. However, passive immunity lasts only for a few weeks or months. Only active immunity is long-lasting.

What are the potential side effects of vaccinations?

While vaccines are very safe, like any medicine they do sometimes cause reactions. Mostly, these are mild "local" reactions (soreness or redness where the shot is given) or a low-grade fever. They may last a day or two and then go away. Sometimes more serious reactions are associated with vaccines. These are much less

Looking Back to Look Ahead - The History of Disease Prevention

Teacher Resource 1: Content Background and Resources

common. Some of them are clearly caused by the vaccine. Some have been reported after vaccination but are so rare that it is impossible to tell if they were caused by the vaccine or would have happened anyway. There is a very small risk that any vaccine could trigger a severe allergic reaction.

Why should vaccinations be required?

Immunizing individual children also helps to protect the health of our community, especially those people who are not immunized. People who are not immunized include those who are too young to be vaccinated (e.g., children less than a year old cannot receive the measles vaccine but can be infected by the measles virus), those who cannot be vaccinated for medical reasons (e.g., children with leukemia), and those who cannot make an adequate response to vaccination. Also protected, therefore, are people who received a vaccine, but who have not developed immunity. In addition, people who are sick will be less likely to be exposed to disease germs that can be passed around by unvaccinated children. Immunization also slows down or stops disease outbreaks.

To explore the concept of community disease prevention, Garrett Hardin's classic essay *The Tragedy of the Commons* describes the challenges presented when societal interest conflicts with the individual's interest. Hardin notes: *"...a community free of an infectious disease because of a high vaccination rate can be viewed as a common. The very existence of this common leads to tension between the best interests of the individual and those of the community. Increased immunization rates result in significantly decreased risk for disease. Although no remaining unimmunized individual can be said to be free of risk from the infectious disease, the herd effect generated from high immunization rates significantly reduces the risk for disease for those individuals. Additional benefit is conferred on the unimmunized person because avoidance of the vaccine avoids the risk for any adverse reactions associated with the vaccine. As disease rates drop, the risks associated with the vaccine come even more to the fore, providing further incentive to avoid immunization. Thus, when an individual in this common chooses to go unimmunized, it only minimally increases the risk of illness for that individual, while conferring on that person the benefit of avoiding the risk of vaccine induced side effects. At the same time, however, this action weakens the herd effect protection for the entire community. As more and more individuals choose to do what is in their 'best' individual interest, the common eventually fails as herd immunity disappears and disease outbreaks occur. To avoid this 'tragedy of the commons', legal requirements have been imposed by communities (in recent times, by states) to mandate particular vaccinations."*

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Teacher Resource 1: Content Background and Resources

WEB RESOURCES

Content Background

<http://www.cdc.gov/vaccines>

<http://www.cdc.gov/vaccines/vpd-vac/default.htm>

<http://kidshealth.org/parent/general/body/vaccine.html>

<http://www.vaccineinformation.org>

<http://www.cancer.org>

<http://www.neahin.org>

Vaccine Information Statements

<http://www.cdc.gov/vaccines/pubs/vis/default.htm>

Time Line Resources

<http://www.eduplace.com/graphicorganizer/>

http://www.educationworld.com/a_lesson/lesson/lesson044.shtml

<http://www.history.com/classroom/classroom.html>

<http://www.jud.ct.gov/LawLib/education.htm>

Lesson Plans & Resources on Internet Safety

<http://bnetsavvy.org/>

www.netsmartz.org/educators.htm

www.media-awareness.ca/english/games/index.cfm

<http://ilearn.isafe.org/>

www.cybersmartcurriculum.org/home

Group Work Rubric

http://www.uen.org/Rubric/rubric.cgi?rubric_id=12916

Create your own rubric

<http://rubistar.4teachers.org/index.php>

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Teacher Resource 1: Content Background and Resources

Resources for Bookmarking Websites for Students on the Internet

(How to create “bookmarks” of websites for the students to conduct Internet research)

<http://iKeepBookmarks.com>

<http://pagekeeper.teachingmatters.org/home>

<http://teachingtoday.glencoe.com/howtoarticles/social-bookmarking>

Suggested Websites to Bookmark for this Activity

<http://inventors.about.com/library/inventors/blvaccination.htm>

<http://www.fightmeningitis.com/meningitis-meningococcal-history.html>

<http://www.cdc.gov/>

Looking Back to Look Ahead - The History of Disease Prevention

Teacher Resource 2: Vocabulary

antibody

Definition: A substance that fights a disease by protecting the body from a virus or bacteria.

Context: Vaccines cause the body to develop antibodies to fight a disease.

antigen

Definition: A substance such as bacteria or a virus that invades the body and stimulates the production of an antibody.

Context: Recognized as a threat by the immune system, an antigen, such as the streptococcus bacteria, triggers the production of an antibody.

bacteria

Definition: Simple one-celled organisms classified as prokaryotes.

Context: Although many bacteria live in the human body without causing harm, some cause tuberculosis, typhoid fever, whooping cough, and other diseases.

contagious

Definition: Capable of being transmitted by bodily contact with an infected person or object

Context: Measles is highly contagious. Infected people are usually contagious from about four days before their rash starts to four days afterwards.

endemic

Definition: The continual, low-level presence of disease in a community

Context: Cutaneous diphtheria is endemic in tropical countries but unusual in the United Kingdom.

epidemiology

Definition: The branch of medicine dealing with the incidence and prevalence of disease in large populations and with detection of the source and cause of epidemics of infectious disease

Context: The accurate dissemination of epidemiological information on cases and outbreaks is very important to public health in preventing emerging or re-emerging infections.

herd immunity

Definition: Having a large percentage of the population vaccinated in order to prevent the spread of certain infectious diseases. Also known as community immunity.

Context: Herd immunity benefits individuals not vaccinated (such as newborns and those with chronic illnesses) because the disease has little opportunity to spread within the community.

Looking Back to Look Ahead - The History of Disease Prevention

Teacher Resource 2: Vocabulary

historical context

Definition: Historical context reflects the time in which something takes place or was created and how that influences how you interpret it.

Context: To determine the historical context of Shakespeare's birth, we will need to know his birth date/year and determine what major things were happening in that year.

immunity

Definition: Protection against a disease. There are two types of immunity, passive and active. Immunity is indicated by the presence of antibodies in the blood and can usually be determined with a laboratory test.

Context: Without evidence of immunity, it is beneficial to give the vaccine within three to five days of exposure.

immunization

Definition: The process of protecting the body against disease using vaccines or serums.

Context: Most children begin their immunization schedule as babies and continue before they begin elementary and middle school.

incubation period

Definition: The time from contact with infectious agents (bacteria or viruses) to onset of disease.

Context: The typical incubation period for measles from exposure to rash onset is approximately 10 days.

infectious

Definition: Likely to spread to others. Capable of spreading disease. Also known as communicable.

Context: Measles is an infectious disease.

vaccine

Definition: A substance that protects a body against a disease by causing the body's immune system to produce antibodies.

Context: Some vaccines provide lifelong protection against infection, while others require several doses given at regular intervals.

virus

Definition: An infectious agent that lives in a cell of another living thing.

Context: Viruses are a major cause of disease and can infect human beings with measles, influenza, and the common cold.

Looking Back to Look Ahead - The History of Disease Prevention

Teacher Resource 3: Instructional Strategy Overview

Interactive Time Line

Interactive Time Line

An interactive time line is a cooperative learning strategy. Students are assigned a block of time during a historically significant time period for the topic being studied. A large time line for the topic is posted in the classroom. The time line should be large enough for students to see from their desks. There should also be enough room for the students to stand in front of the time line.

Following an introduction to the topic, students will have a basic knowledge of the significance of the history of the given topic. Tell students they will be researching a block of time on the time line. Divide students into groups, with each group assigned to a different block of time. Instruct groups to research the events that occurred during their respective time blocks. Once they have done their research, have them place the events and key information on the time line using words, pictures, definitions, and drawings. Once all groups have created their own sections of the time line, post all of the pieces together on the wall to form one long time line. The time line should remain posted throughout the unit. The time line can be used to facilitate learning in a variety of ways. It can be used for individual, partner, small group and whole class activities.

Interactive Time Line Secret: If you have access to PowerPoint, have students re-create the entire time line as a PowerPoint presentation at the conclusion of the unit of study.

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Teacher Resource 4: Anecdotes

Ring Around the Rosy

Have you ever heard the nursery rhyme Ring Around the Rosy?
AKA Ring-a-Ring o'Rosies

* Ring around the rosy
A pocketful of posies
"Ashes, Ashes"
We all fall down!

Older version...

* Ring-a-Ring o'Rosies
A Pocket full of Posies
"A-tishoo! A-tishoo!"
We all fall Down!

What is the historical context of this nursery rhyme?

Ring around the rosy goes back to the black plague in England, circa 1665 (or perhaps earlier in the 1300s when the bubonic plague first hit).

The symptoms of the plague included a rosy red rash in the shape of a ring on the skin (ring around the rosy), and violent sneezing (a-tishoo, a tishoo).

It was believed that the disease was spread by bad smells. Therefore people carried pockets and pouches of sweet smelling herbs (posies).

The death rate was over 60% (we all fall down) and the plague was only halted by the Great Fire of London in 1666 which killed the rats that carried the disease.

After death the bodies were cremated (ashes ashes).

Looking Back to Look Ahead - The History of Disease Prevention

Teacher Resource 4: Anecdotes

Smallpox Vaccine

In 1776, Edward Jenner, a British scientist and surgeon, had an idea that led to the development of the first vaccine. A young milkmaid told him people who contracted cowpox never got smallpox. Cowpox is a harmless disease from contact with cows. Smallpox, however, is a deadly disease. With this in mind, Jenner took samples from the open cowpox sores on the hands of a young milkmaid named Sarah Nelmes. He made a shot from the pus taken from Sarah and gave the shot to eight-year-old James Phipps. (Keep in mind that this was the 18th century. We would not do this today.)

The boy developed a slight fever and a few sores but remained healthy. A few months later, Jenner gave the boy another injection containing smallpox. James failed to develop the disease, and the idea behind the modern vaccine was born. Giving shots to prevent smallpox soon became a common practice. It would be another 50 years before doctors understood why vaccines work.

Today we give vaccinations to prevent many diseases. Some of the sicknesses vaccines help to stop are the measles, the mumps, polio, and chickenpox.

Incidentally, Jenner's name for these injections was not an accident. He called the injections "vaccines" because in Latin the word "vaccinus" means "from cows".

Looking Back to Look Ahead - The History of Disease Prevention

Teacher Resource 4: Anecdotes

HPV Vaccine

The Yellow Umbrella story

Human papillomavirus (HPV) is a virus that is spread through sexual contact. Usually, HPV has no symptoms. There are many types of HPV some of which lead can lead to cervical cancer or genital warts. According to the Centers for Disease Control and Prevention, by the age of 50 more than 80% of American women will have contracted at least one type of genital HPV. Both men and women can be carriers of HPV.

There is now a vaccine that prevents the types of HPV that cause most cases of cervical cancer and genital warts. Work on the vaccine began in the mid 1980. In 2006, the U.S. Food and Drug Administration approved the first preventive HPV vaccine. Every year, about 3,700 women die per year of cervical cancer. This is a story of one young survivor's journey.

"I'm going to be a rock star! That was my dream in January of 2000, when I quit my day job to pursue fulltime my one true passion, music. My band was doing great, and I could not have been happier. One week later, I saw blood. Immediately, I called my gynecologist, who chalked it up to stress, told me not to worry and said he would see me at my annual exam in March. Of course, he's the doctor, so I trusted him and happily continued to write songs and book my band to play. I felt so lucky to be able to pursue my dreams.

"This was not to last. Although all of my previous Pap tests had been normal, the results from my Pap in March showed some abnormal cell growth on my cervix. My doctor ordered a colposcopy, a more advanced exam that allowed him to take a biopsy and test my cells for problems. At that point, I barely knew where my cervix was, much less about cell mutations that could turn into cancer many years down the road if not treated!

"My doctor assured me that because of my history of normal Paps, he was sure I did not have cancer. It was, he said, probably just "dysplasia" – pre – cancerous cells that can be easily treated. We were to meet the following week to discuss the results of the colposcopy and biopsy, and I was scheduled to have a simple follow-up procedure to remove the bad cells.

"The doctor was wrong. On April 18, 2000, I was diagnosed with advanced cervical cancer with extensive lymphatic invasion. Everything happened so quickly after that. Ten days later, I had a radical hysterectomy. One month after that, I had a laparoscopic procedure to move my ovaries out of the "frying zone." Then, I had five weeks of daily pelvic radiation, concurrent with four rounds of chemotherapy followed by three rounds of internal radiation (brachytherapy). They basically gave me everything they had to save me. Within four months, I was done with everything. Except, that is, for the deep, dark depression to follow.

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Teacher Resource 4: Anecdotes

“Everyone knows that the treatment is hard and it takes an awful toll on the body. But for me, the depression was undoubtedly the worst. I felt like I lost everything. Music, the one passion that always centered me and guided my life, was gone. I couldn't play, sing or write; I didn't know who I was anymore. Like my cancer treatment, I attacked the depression with full force, using individual therapy, group therapy, anti-depressants, acupuncture, yoga, journaling and more. Time and perseverance gradually began to work; I had already worked so hard to stay alive and I refused to quit. I wanted my life back. However, the music seemed to have left my body with my uterus and I felt like it would never return.

“My life-altering moment occurred while watching the movie Harold and Maude. The character of Maude is an older woman who embraces all that life has to offer – every sensation, touch, smell, feel. She lives in the moment while teaching a young boy, Harold, to do the same. Maude's spirit and the Cat Stevens soundtrack drew me back to the piano. I felt the song, "Trouble," had been written for me, and described what the last year and a half of my life had been. That moment, in the fall of 2001, changed my life. I knew I needed to help others through my music and my voice. That's what motivated me to start using my music to educate other women about cervical cancer and what they could do to prevent it.

“In 2003, I created The Yellow Umbrella (concert) tour (named after the cheery yellow umbrella Maude carried in the movie). Since then, I have performed with a variety of singers across the country – telling my story through my music, educating women and the men who care for them about cervical cancer, HPV and the HPV test.”

-Christine Baze, Founder/Executive Director, Yellow Umbrella Organization

Source: <http://www.thehpvtest.com/>

TEEN SEXUAL HEALTH AND VACCINE EDUCATION

A CURRICULUM PROJECT TO SUPPORT AND PROMOTE
THE PREVENTION OF SEXUALLY TRANSMITTED INFECTIONS

Looking Back to Look Ahead - The History of Disease Prevention Teacher Resource 5: Group Work Evaluation Rubric

Directions: Explain the rubric to the class before the activity begins. First, have students complete a self-evaluation using the first Group Work Rubric on the sheet. Second, give the rubric to a group member to complete the second rubric. Finally, based on anecdotal observations, the teacher completes the third rubric on the page.

STUDENT NAME _____

SELF EVALUATION

Interactive Time Line Project	Point Total _____/20				Total
	1	2	3	4	
Interacted, discussed, and posed questions	never	rarely	often	always	
Contributed to the small group research effort	never	rarely	often	always	
Listened to others, offered ideas and shared information	never	rarely	often	always	
Participated in creating the time line	never	rarely	often	always	
Encouraged and supported teammates	never	rarely	often	always	

PEER EVALUATION

Interactive Time Line Project	Point Total _____/20				Total
	1	2	3	4	
Interacted, discussed, and posed questions	never	rarely	often	always	
Contributed to the small group research effort	never	rarely	often	always	
Listened to others, offered ideas and shared information	never	rarely	often	always	
Participated in creating the time line	never	rarely	often	always	
Encouraged and supported teammates	never	rarely	often	always	

TEACHER EVALUATION

Interactive Time Line Project	Point Total _____/20				Total
	1	2	3	4	
Interacted, discussed, and posed questions	never	rarely	often	always	
Contributed to the small group research effort	never	rarely	often	always	
Listened to others, offered ideas and shared information	never	rarely	often	always	
Participated in creating the time line	never	rarely	often	always	
Encouraged and supported teammates	never	rarely	often	always	

Evaluation Point Total _____/60

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Teacher Resource 6: Reference List

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Kids Health Organization <<http://kidshealth.org>>

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Sexuality Information and Education Council of the United States <<http://www.siecus.org/index.cfm>>

Say Something <<http://www.say-something.org/>>

The Yellow Umbrella <<http://www.theyellowumbrella.org/>>

U.S. Centers for Disease Control and Prevention <<http://www.cdc.gov/>>

U.S. Department of Health and Human Services <<http://www.hhs.gov/diseases/>>

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World Health Organization <www.who.org/>

Lesson Plan: Setting the Record Straight – Clarifying Information about Sexual Health

Overview and Purpose: The purpose of this lesson is to promote teen sexual health through an interactive activity. This lesson is designed to clarify knowledge and boost the comfort level with the topic of sexually transmitted infections (STIs).

Grade Level: Grades 9-12

Estimated Time Allotment: four class periods

(based on 50-minute class periods, with 45 minutes of instructional time for this lesson; specific durations of activities are provided within the Lesson Procedures section)

Curriculum Focus: Health

Learning Objectives

The student will be able to...

- list several common sexually transmitted infections (STIs)
- describe the relevance, symptoms, treatment, and prevention of seven common STIs
- utilize prior knowledge to answer questions about STIs
- collaborate with other students

Standards Addressed

Health

American Alliance for Health, Physical Education, Recreation and Dance (AAHPERD) and American Association for Health Education (AAHE), National Health Education Standards

Health Education Standard 1: Students will comprehend concepts related to health promotion and disease prevention

1.12.5. (9-12) Propose ways to reduce or prevent injuries and health problems

1.12.8. (9-12) Analyze personal susceptibility to injury, illness or death if engaging in unhealthy behaviors

Health Education Standard 3: Students will demonstrate the ability to access valid information and products and services to enhance health

3.5.2 (3-5) Locate resources from home, school and community that provide valid health information

3.8.2. (6-8) Access valid health information from home, school, and community

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Health Education Standard 4: Students will demonstrate the ability to use intercommunication skills to enhance health and avoid or reduce health risks

4.12.1. (9-12) Utilize skills for communicating effectively with family, peers, and others to enhance health

Health Education Standard 7: Students will demonstrate the ability to practice health-enhancing behaviors and avoid or reduce health risks

7.12.1. (9-12) Analyze the role of individual responsibility in enhancing health

Health Education Standard 8: Students will demonstrate the ability to advocate for personal, family and community health

8.5.1 (3-5) Express opinions and give accurate information about health issues

Mid-Continent Research for Education and Learning (McREL) Standards, Curriculum Standards for Health Education Content Standard 10. Understands the fundamental concepts of growth and development

Level IV (Grades 9-12) Benchmark 2. Understands how physical, mental, social, and cultural factors influence attitudes and behaviors regarding sexuality

Knowledge/skill statements

Understands how physical factors influence attitudes regarding sexuality
Understands how physical factors influence behaviors regarding sexuality
Understands how mental factors influence attitudes regarding sexuality
Understands how mental factors influence behaviors regarding sexuality
Understands how social factors influence attitudes regarding sexuality
Understands how social factors influence behaviors regarding sexuality
Understands how cultural factors influence attitudes regarding sexuality

Content Standard 11. Knows health risk factors and techniques to manage and reduce those risks

Level IV (Grades 9-12) Benchmark 3. Knows how to make positive health decisions related to injury, tobacco, nutrition, physical activity, sexuality, and alcohol and other drugs

Knowledge/skill statements

Knows how to make positive health decisions related to sexuality

Sexuality Information and Education Council of the United States, Guidelines for Comprehensive Sexuality Education

Key Concept 4: Sexuality is a central part of being human, and individuals express their sexuality in a variety of ways.

Topic 4: Sexual Abstinence

Level 2: Children are not physically or emotionally ready for sexual intercourse and other sexual behaviors

Level 3: Abstinence from intercourse has benefits for teenagers and adults

Level 3: Sexual abstinence is the best method to prevent pregnancy and STDs/HIV

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Level 3: Teenagers considering sexual activity should talk to a parent or other trusted adult about their decisions, contraception, and disease prevention

Key Concept 5: The promotion of sexual health requires specific information and attitudes to avoid unwanted consequences of sexual behavior.

Topic 1: Reproductive Health - Men and women must care for their reproductive health

Level 3: Individuals who suspect something is wrong with their sexual or reproductive organs, such as genital discomfort or itching or a lump in a breast or testicle, should seek medical attention immediately

Level 3: Untreated STDs during adolescence can be especially dangerous to a boy's or girl's future reproductive capability

Topic 2: Contraception

Level 3: Some methods of contraception, such as condoms, can also prevent the transmission of STDs/HIV. The most effective methods of contraception, such as the Pill, injection, and the birth control patch do not help prevent the transmission of STDs/HIV. Couples who want to reduce their risk for both pregnancy and STDs/HIV need to use male or female condoms along with another effective method of contraception.

Level 4: When choosing contraception, people must weigh the advantages and disadvantages of a particular method as well as its effectiveness in preventing pregnancy and STDs/HIV

Topic 5: Sexually Transmitted Diseases

Level 2: STDs are sometimes referred to as sexually transmitted infections or STIs. STDs include diseases such as gonorrhea, syphilis, HIV infection, chlamydia, genital warts, and herpes. The viruses and bacteria that cause STDs are usually found in the semen, vaginal fluids, and blood of an infected person. STDs are most commonly passed during sexual contact, but some can also be passed by sharing unsterilized needles or from a mother to child during pregnancy, birth, or breastfeeding. Abstinence from sexual activity is an effective way to avoid STDs. STDs can be passed during vaginal, oral, or anal intercourse. STDs can be transmitted even if the person does not have signs of infection. Anyone, regardless of age or sexual orientation, can get STDs if they have sexual contact with an infected person. Uninfected individuals who engage in sexual behavior cannot get an STD from each other. A person can have more than one STD at a time and can get an STD more than once. Those STDs caused by bacteria, such as gonorrhea, Chlamydia, or syphilis, can be cured with prescription medication. Those STDs caused by viruses, such as HIV, human papillomavirus (one type of HPV causes genital warts), herpes, and hepatitis, can be treated but not cured.

Level 3: Many teenagers who have vaginal, oral, or anal intercourse will become infected with an STD. The major symptoms of most STDs include genital discharge, sores on the genitals or mouth, abdominal pain, painful urination, skin changes, genital itching, or sore throat. The symptoms of STDs can be hidden, absent, or unnoticed, especially in women. One cannot determine who has an STD by just looking at that person or at that person's genitals.

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The only sure way to know if someone is infected with an STD is from testing and a medical exam. Individuals suspecting that they have an STD should stop having sexual intercourse, promptly go to a healthcare provider for testing, and refer sexual partners to a healthcare provider as well. Untreated STDs can lead to serious health problems, including infertility. Hepatitis B is the only STD that can be prevented by a vaccine. Proper use of latex condoms, along with water-based lubricants, can greatly reduce but not eliminate the chance of getting an STD.

Level 4: Individuals can help fight STDs by serving as an accurate source of information, by being a responsible role model, and by encouraging others to protect themselves.

Curriculum Integrations

Reading and Language Arts, International Reading Association and National Council of Teachers of English Standards, Standards for the English Language Arts

4: Students adjust their use of spoken, written, and visual language (e.g., conventions, style, vocabulary) to communicate effectively with a variety of audiences and for different purposes

11: Students participate as knowledgeable, reflective, creative, and critical members of a variety of literacy communities

12: Students use spoken, written, and visual language to accomplish their own purposes (e.g., for learning, enjoyment, persuasion, and the exchange of information)

Lesson Procedures for Teacher

Before teaching the Lesson

Teacher Background: Content Background and Resources, Lesson Vocabulary and Instructional Strategy Overview (Teacher Resources 1, 4 and 5)

Teacher Preparation:

Materials and Planning Notes

Prepare for the students to work in small groups and move around the room

Prepare to list common STIs (Teacher Resource 3) on a blank overhead, chart paper or the board

Prepare charts for the Carousel Brainstorm activity using a poster maker or copying the outline from Teacher Resource 7 onto seven posters. Write the name of one of the STIs on top of each poster (HIV, hepatitis B, HPV/genital warts, herpes, syphilis, gonorrhea, chlamydia). Place the posters around the room.

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Additional Materials: chart paper, markers, tape, index cards (two per student, plus a stack of extras), a covered box with slot cut into the lid (wide enough to drop in an index card), a box of envelopes (at least one per student – less may be needed), blank paper (one sheet per student)

During teaching of the Lesson

Index Card Survey

30 minutes

1. Explain that you want to begin this lesson by giving students time to reflect about the topic of sexually transmitted infections on their own. Ask them to decide what their knowledge level is on a scale from 1 to 10, 10 being very knowledgeable and 1 being not knowledgeable at all. Please encourage students to think independently. This information is not intended to be shared with the whole group. Explain that in a moment you will ask them to anonymously write this number on an index card.
2. Give each student an index card. Ask the students to write their knowledge level number on one side of the index card and on the other side to write one question they have about sexually transmitted infections. If they knew the answer to this question, it may increase their knowledge level number. Again, reinforce to students that this is an anonymous activity. If they have no questions, encourage students to write a piece of information on the card that they feel may increase another student's knowledge level.
3. Explain to students that you will also be placing an anonymous question box with extra index cards in the front of the room. Students may place questions in this box at any time during this lesson.
4. Tally the knowledge level numbers from the index cards. Share the totals with the class to motivate students for this lesson. For example, you might say, "Based on the information collected, over half of you rated your knowledge level as under five, meaning you feel somewhat knowledgeable about STIs. This is a great starting point, because it seems like we have some things about STIs to learn or clarify, but a lot of knowledge to share with each other as well."

Preparation Note: After collecting the index cards, you will need to copy the questions from each card onto the front of the envelopes for the closing activity (Mail Call) in order to protect the students' anonymity during this lesson.

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Activate Prior Knowledge – Whole Class Discussion

45 minutes

1. Explain to the students that you asked them to complete the index cards because as a class you will be spending more time learning about sexually transmitted infections. The cards were a way to get them thinking about what they know and what they want/need to know about this important topic. It was also a way for you to gauge their knowledge level and plan accordingly for this important topic.
2. Define STIs (sexually transmitted infections). Ask the students to suggest a meaning for this acronym. Using their input, provide a common meaning for the students.
(Preparation note: Use Teacher Resource 1 - Content Background and Resources to become familiar and well versed with this discussion material. As the discussion continues, the teacher will supplement the students' knowledge with the necessary background information to begin this lesson.)
3. Conduct a whole class discussion to develop a list of STIs. The steps to facilitate the discussion are provided on Teacher Resource 2.
4. Once the discussion is complete and there is a list of STIs on the board, check mark the seven STIs that the students will be learning about during this lesson (hepatitis B, HIV/AIDS, syphilis, human papillomavirus (HPV) and genital warts, chlamydia, gonorrhea and genital herpes). Ask students why they think you marked those seven. Explain to students that the seven you marked are the most common infections among teenagers.
5. Explain to students that they will be participating in an activity with their classmates to learn more about these infections. They will be discovering the relevance, symptoms, treatment, and prevention for each of the infections listed through an activity called a Carousel Brainstorm.

Learning Activity – Carousel Brainstorm

90 minutes

1. Create seven groups. Each group will move to one of the seven posters positioned on the wall for this activity. Have the students count off so that there is a balanced number at each poster.
2. Introduce and conduct the Carousel Brainstorm activity.
 - Each group will go to the poster they are assigned.
 - They will appoint a “scribe” for their group, the teacher will give each group a different color marker for the “scribe” to use.
 - The group will brainstorm answers in the first column on the poster, the “scribe” will record the group’s predictions/responses/opinions.

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- Review brainstorming guidelines: be encouraging (everyone has a voice) and be polite (do not cross out answers or write any unkind remarks on the posters).
 - When the teacher signals, the groups will rotate clockwise to a new poster. They will read what the group before them wrote in the first column, and they will respond in the second column.
 - When the teacher signals, the groups will rotate again to the next poster. They will read what the two groups before wrote in the first and second columns. They will add their opinions to the second column using check marks when they agree, and by adding any additional information.
 - When the teacher signals again, the groups will rotate again - repeating the process until each group has visited all seven posters.
3. After every group has visited all posters, ask the students to return to their seats.
 4. One at a time, take each poster and bring it to the front of the room. Tell the students that you are going to build on what they know and use their posters to “set the record straight” about STIs.
 5. Discuss the completed posters. Use the posters to provide the answers to the questions. Reflect on what the students wrote and then give the students the accurate information (use Content Background, Teacher Resource 1 and Teacher Resource 7 to help you with this process). Repeat this process for all seven STIs for this lesson (HIV/AIDS, hepatitis B, HP V/Genital Warts, genital herpes, syphilis, gonorrhea, and chlamydia).

Closing Activity – Mail Call and Revisit Index Card Survey

45 minutes

1. ***Before conducting this closing activity*** select questions from the students’ index cards from the opening activity and from the question box that you have had out during this lesson. Re-write each question on the front of an envelope. *(Note: you will need to preview the questions and purposefully select and/or reword questions appropriately for this activity. You may need to set some time aside to directly answer the questions that will not work and cannot be used with this activity).*
2. Depending on the number of questions selected for the activity, determine if the students should work independently, in partners, trios, or small groups to research and answer the questions.
3. Now that the students have learned about sexually transmitted infections, explain that you will be using an activity called Mail Call to answer the questions that other classmates

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- posed at the beginning of the lesson and some of the questions that were placed in the questions box.
4. Remind students that the questions have been randomly selected and/or reworded and that the questions were collected and submitted anonymously.
 5. Distribute a piece of paper to each student and an envelope (with a question written on the front) to each person or group. Have the students use the blank piece of paper to write the answer to the question they were given. They can use the Carousel Brainstorm activity posters and their notes from the activity as a resource. If they are working in pairs or with a small group, they can discuss the answers they have written.
 6. When they have finished, have the students fold the sheets of paper and place them in the envelope. Collect the envelopes. Randomly redistribute the envelopes, ensuring that each student or group gets a new envelope.
 7. Have the students (or groups) read the question on the envelope and the answer inside, they can add information, confirm the answer, or offer a new answer. When they have finished have students place the answer sheet back into the envelope. Collect the envelopes.
 8. Read the questions and answers to the whole class.
 9. After the mail call activity explain to the students that you want to end this lesson the same way you began the lesson, by giving students time to reflect about the topic of sexually transmitted infections on their own. Tell students now that they have participated in the lesson you will be asking them to reassess their knowledge level. Ask them to decide what their new knowledge level is on a scale from 1 to 10, 10 being very knowledgeable and 1 being not knowledgeable at all. Please encourage students to think independently. As before, each individual's information will not be shared whole group. Explain that in a moment you will ask them to anonymously write this number on an index card.
 10. Give each student a new index card. Ask the students to write their knowledge level number on the index card. Reinforce to students that this is an anonymous activity.
 11. Tally the new knowledge level numbers from the index cards. Share the totals with the class to conclude the lesson. For example you might say, "Based on the information collected, nearly all of you rated your knowledge level as eight or more, meaning you feel pretty knowledgeable about STIs. This is compared to a starting point of most of you rating yourselves at about a level five. This is a great representation of all of the work you put into this lesson."

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Supplemental Materials

Resources to accompany this lesson plan have been created and are provided after this section. This lesson plan contains the following supplemental materials (as referenced throughout this section).

Teacher Resources

Teacher Resource 1: Content Background and Resources for Vaccine Education

Teacher Resource 2: Activating Prior Knowledge/Leading a Class Discussion

Teacher Resource 3: List of Sexually Transmitted Infections

Teacher Resource 4: Instructional Strategy Overview

Teacher Resource 5: Lesson Vocabulary

Teacher Resource 6: Group Work Evaluation Rubric

Teacher Resource 7: Carousel Master

Teacher Resource 8: STI Quick Write

Teacher Resource 9: Reference List

Modifications

- Assign the students to mixed ability groups, rather than numbering off.
- Rotate the “Scribe” role.
- Display the posters from the Carousel. Assign a small group of “Investigators” to each STI Poster. Have the students complete the research to discover the accuracy of the information on the posters. Have the groups report their finding to the whole class (See Teacher Resource 1 for additional resources and websites that students could use to conduct the research).
- Have students refer to the posters after the teacher shares the information. Assign each group a poster and have that group make corrections to the poster based on the prior class discussion.

Assessment

- Assessment of Learning Process: Anecdotally observe students during class and small group discussion.
- Assessment of Group Skills: Informally observe students working together. If appropriate, use the Group Work Evaluation Rubric (Teacher Resource 6) or create your own.

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- Assessment of Content Knowledge: If appropriate, use the STI Quick Write activity (Teacher Resource 8) at the end of the lesson, collect and evaluate. The Quick Write can also be utilized as a Pre- and Post-Assessment.

After teaching the Lesson

Extension and Additional Activities (Take Home Component)

- Plan to teach this lesson as well as other activities in honor of National STD Awareness Month in April.
- Teach another subject using the Carousel strategy.
- Have students work in small groups using this information to create a public service announcement about STIs.

Lesson At – A– Glance

Opening: Index Card Survey (before)	45 minutes
Learning Activity: Carousel Brainstorm	90 minutes
Closing: Index Card Survey (after) & Mail Call	45 minutes

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Teacher Resource 1: Content Background & Resources

“The primary goal of sexuality education is the promotion of adult sexual health. It assists children in understanding a positive view of sexuality, provides them with information and skills about taking care of their sexual health, and helps them acquire skills to make decisions now and in the future.”

*Statement from the Guidelines for Comprehensive Sexuality Education
From the National Guidelines Task Force*

“Each year, there are approximately 19 million new STD infections in the United States, and almost half of them are among youth aged 15 to 24. Thirty-four percent of young women become pregnant at least once before they reach the age of 20. These behaviors usually are established during childhood, persist into adulthood, are inter-related, and are preventable. In addition to causing serious health problems, these behaviors also contribute to the educational and social problems that confront the nation, including failure to complete high school, unemployment, and crime.”

*Statement from the National Center for Chronic Disease Prevention and Health Promotion
Division of Adolescent and School Health*

“Research indicates one out of every two teenagers will leave high school having been engaged in sexual activity. Research also shows increased numbers of teenagers who are contracting sexually transmitted diseases and HIV.”

*Statement from American Pediatric Association and the
Centers for Disease Control and Prevention*

Important Facts About Teen Sexual Health

- Sexually transmitted infections (STIs) affect men and women of all backgrounds and economic levels. They are most common among teenagers and young adults. Nearly half of all STIs occur in young people 15 to 24 years old. A recent study by the CDC released in March of 2008 estimates that one in four, 26 percent of young women between the ages of 14 and 19 in the United States – or 3.2 million teenage girls – are infected with at least one of the most common sexually transmitted diseases

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Teacher Resource 1: Content Background & Resources

(human papillomavirus (HPV), chlamydia, herpes simplex virus, and trichomoniasis). Many STIs have no symptoms.

- Even when no symptoms appear, an infected person may be able to pass the infection along to others. That is why many healthcare providers recommend periodic testing or screening.
- STIs can have serious consequences. Health problems caused by STIs tend to be more severe and more frequent for women than for men. They can lead to pelvic inflammatory disease (PID), fertility issues, genital warts, and/or cervical cancer.
- Many experts believe that having an STI increases the risk of becoming infected with HIV.
- If diagnosed and treated early, many STIs can be treated effectively.
- There are several steps that can be taken to prevent STIs.
- Education and effective communication can also assist in the process of preventing STIs in young people. The surest way to prevent all STIs remains abstinence. It is valuable for young adults to learn more about sexual health regardless of their choices. Teens need to be able to understand these issues in order to make good choices themselves and to help their peers make good choices as well. It is important to ensure that students have the necessary tools and knowledge to make healthy choices.

Key Points from the Department of Health and Human Services, Centers for Disease Control and Prevention

- The surest way to prevent any STI is not to have sex or to have sex only with someone who's not infected and who has sex only with you.
- Condoms can reduce your risk of getting an STI if used the right way every single time you have sex.
- Washing the genitals, urinating, or douching after sex will not prevent any STI.
- Touching doorknobs, toilet seats, sharing drinking cups, etc. does NOT spread STIs.
- STIs are NOT spread by coughing or sneezing.

Defining Sexually Transmitted Infections with Students

- Sexually transmitted infections (STIs) are infections that are transmitted through genital contact during sexual activity with another person who is contagious.

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Teacher Resource 1: Content Background & Resources

- STI means the same thing as the term venereal disease (VD), which is no longer used because it does not accurately explain the infections that can be passed through sexual activity.
- STI means the same thing as the term sexually transmitted disease (STD). STI is more accurate and more commonly used because of the word infection instead of disease. Many infections don't cause diseases or symptoms.
- The term reproductive tract infection (RTI) is also sometimes used because not all the infections in the genitals are transmitted sexually. But this leaves out infections in the oral and anal areas

Discussing the Relevance of this Material with Students

- Some STIs are more common than the common cold.
- Some STIs are mostly uncomfortable and embarrassing, while others are deadly serious.
- Teenagers are one of the highest risk groups for STIs.
- There are ways to prevent or reduce the risk of every STI.
- Almost every STI is treatable and/or curable.
- This lesson will be a review for some students, or some may feel they do not need it. It is still relevant for everyone because our knowledge and need for knowledge about sexual health is always changing. Even if students feel that they do not need this information for themselves, they can utilize it to help their friends and families.

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Teacher Resource 1: Content Background & Resources

WEB RESOURCES

Content Background

http://www.guttmacher.org/pubs/fb_sexEd2006.html

<http://www.siecus.org/>

<http://www.washingtonpost.com/wpdyn/content/story/2008/03/13/ST2008031302113.html>

Group Work Rubric

http://www.uen.org/Rubric/rubric.cgi?rubric_id=12916

Create your own rubric

<http://rubistar.4teachers.org/index.php>

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Teacher Resource 2:

Activating Prior Knowledge/Leading a Class Discussion

Step 1: Identify the Topic

Make sure students understand what sexually transmitted infections (STIs) are before beginning the brainstorming activity. Sexually transmitted infections (STIs) are infections that are transmitted through genital contact during sexual activity with another person who is infected. Most STIs are curable, but some are not. If you have sex with someone who has an STI, you can get it too. Many people who have an STI don't know it because many STIs have no symptoms. The surest way to prevent STIs is not to have sex.

Step 2: Ask the Question

Can the students name any sexually transmitted infections (STIs)? Ask students to name infections that they believe to be sexually transmitted.

Step 3: Record Answers

Create a list on the board of all of the infections students provide.

Step 4: Clarify the List

Review the list that the students have provided. Indicate to the students which infections are classified as STIs and which are not and why. There are many resources that provide information about STIs some of which may classify some of these infections differently. Explain that for the purpose of this lesson we will rely on the classifications of credible organizations such as the CDC. Infections such as colds can technically be transmitted through sexual contact but it is more likely that these common infections are transmitted through things like coughing and sneezing first, so they are not considered STIs. Mark the infections that are STIs. Move the infections that are not STIs to a separate list on the board entitled, "Not Considered STIs."

Step 5: Add to the list

Using Teacher Resource 3, add any additional STIs to the list that the students did not name. The final product on the board should be a written list of all of the STIs on the List of Sexually Transmitted Infections - Teacher Resource 3.

Step 6: Discuss STIs

Supplement the students' responses (using Teacher Resource 3) to ensure that the correct information is provided. Ask the students if they know which of the STIs listed is caused by a virus and which is caused by a bacterium. Explain the difference to the students. A **bacterium** is a tiny one-celled organisms present throughout the environment that require a microscope to be seen. Not all bacteria are harmful, but some cause disease. Diseases caused by bacteria can be cured with drugs called antibiotics. A **virus** is a tiny organism that multiplies within cells and causes diseases. Antibiotics, do not affect viruses. Discuss and identify STIs which can be transmitted ONLY through sexual contact and those which can SOMETIMES be transmitted through sexual contact.

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Teacher Resource 3: List of Sexually Transmitted Infections (STIs)

Sexually Transmitted Infections			
	Overview	Type of Organism	Transmission Method (ONLY sexual contact or SOMETIMES sexual contact)
Bacterial Vaginosis (BV)	BV is the name of a condition in women where the normal balance of bacteria in the vagina is disrupted and replaced by an overgrowth of certain bacteria.	Bacterium	Sometimes
Chlamydia	A bacterial infection that can scar the fallopian tubes affecting a woman's ability to have children.	Bacterium	Only
Genital Herpes	Genital herpes is a recurrent skin condition that can cause skin irritations in the genital region (anus, vagina, penis).	Virus	Only
Gonorrhea	A bacterial infection of the penis, vagina or anus.	Bacterium	Only
Hepatitis A and B	A disease that affects the liver. There are more than four types. "A" and "B" are the most common.	Virus	Only
HIV Disease and AIDS	Human immunodeficiency virus or HIV is a virus that attacks the immune system resulting in Acquired Immunodeficiency Syndrome, or AIDS.	Virus	Only
Human Papillomavirus (HPV) and Genital Warts	HPV is a virus that affects the skin in the genital area, as well as a female's cervix. HPV usually clears the body on its own, without causing visible symptoms. Some types of persistent HPV infection can cause warts, abnormal cell changes, or cancer.	Virus	Only
Nongonococcal Urethritis (NGU)	NGU is a treatable bacterial infection of the urethra (the tube within the penis) often times associated with chlamydia.	Bacterium	Sometimes
Pelvic Inflammatory Disease (PID)	PID is a general term that refers to infection of the uterus (womb), fallopian tubes (tubes that carry eggs from the ovaries to the uterus) and other reproductive organs. It is a common and serious complication of some sexually transmitted infections.	Bacterium	Only
Pthiriasis (Pubic Lice or Crabs)	Also known as pediculosis pubis, crabs are parasites or bugs that live on the pubic hair in the genital area.	Insect	Sometimes
Syphilis	A treatable bacterial infection that can spread throughout the body and affect the heart, brain, nerves. Also known as "syph".	Bacterium	Only
Trichomoniasis	Trichomoniasis is a common sexually transmitted infection that affects both women and men.	Protozoan	Only
Urethritis	An infection of the urethra, the tube that urine goes through to leave the body. Urethritis is often caused by an STI.	Bacterium	Sometimes

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Teacher Resource 3: List of Sexually Transmitted Infections (STIs)

<i>Commonly Confused</i>	
Non-Sexually Transmitted Infections	
<i>Infections the students may incorrectly name as STIs during the discussion</i>	
Cytomegalovirus (CMV)	CMV is a common virus that infects people of all ages. Once CMV is in a person's body, it stays there for life.
Epstein-Barr Virus (EBV) and Mononucleosis	Many children become infected with EBV, and these infections usually cause no symptoms or are indistinguishable from the other mild, brief illnesses of childhood. When infection with EBV occurs during adolescence or young adulthood, it causes infectious mononucleosis.
Giardiasis	Giardiasis is a parasitic disease caused by a microscopic parasite. The parasite is found on surfaces or in soil, food, or water that has been contaminated with the feces from infected humans or animals. People can become infected after accidentally swallowing the parasite. Giardia causes diarrheal illness, and giardiasis is a common cause of waterborne disease in humans in the United States.
Group A Streptococcus (GAS)	Group A Streptococcus is a bacterium often found in the throat and on the skin. Most GAS infections are relatively mild illnesses such as "strep throat," or impetigo. These bacteria are spread through direct contact with mucus from the nose or throat of persons who are infected or through contact with infected wounds or sores on the skin.
Hepatitis C	Hepatitis C is a liver disease caused by the hepatitis C virus (HCV). HCV infection sometimes results in an acute illness, but most often becomes a chronic condition that can lead to cirrhosis of the liver and liver cancer. It spreads through contact with the blood of an infected person, primarily through sharing contaminated needles to inject drugs.
Human Parainfluenza Viruses (HPIVs) or Common Cold	HPIVs can also cause serious lower respiratory tract disease with repeat infection (e.g., pneumonia, bronchitis, and bronchiolitis).
Influenza (Flu)	Influenza is a contagious respiratory illness caused by influenza viruses.
Pediculosis (Head Lice)	Head lice infest the head and neck and attach their eggs to the base of the hair shaft. Lice move by crawling; they cannot hop or fly. Head lice infestations are spread most commonly by close person-to-person contact.
Scabies	Scabies is an infestation of the skin with the microscopic mite <i>Sarcoptes scabiei</i> . Scabies spreads rapidly under crowded conditions and frequent skin-to-skin contact between people, such as in hospitals, institutions, child-care facilities, and nursing homes.
Tinea Cruris (Jock Itch) Tinea Pedit (Athlete's Foot)	Dermatophytes are types of fungi that cause common skin, hair and nail infections. One example of a very common dermatophyte infection is athlete's foot, which is also called tinea pedis. Another common dermatophyte infection affecting the groin area is jock itch, also known as tinea cruris.
Candidiasis (Yeast Infection)	Candidiasis is a fungal infection that occurs when there is overgrowth of fungus called <i>Candida</i> . <i>Candida</i> is normally found on skin or mucous membranes.

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Teacher Resource 4: Instructional Strategy Overview

Carousel Brainstorm

A carousel brainstorm is a cooperative learning strategy that actively involves students. It can be used for a variety of purposes such as activating background knowledge or checking for understanding after learning about a topic. In small groups, the students rotate to different charts/posters around the room and record answers, thoughts, or ideas. The charts/posters are pre-labeled with a subtopic within a unit of study. The charts/posters can be used for formatting predictions, answering questions or solving problems, brainstorming ideas, or debating/discussing information on a topic. A carousel brainstorm is sometimes referred to as a Graffiti Brainstorm. It is an inclusive activity that involves all students.

Steps:

- Determine a number of subtopics within a unit of study. (For example if the class is studying the continents there would be seven groups (and seven posters). Pre-label the posters with a different subtopic and any questions or directions. Place the posters in several accessible locations in the classroom.
- Assign students a group/poster number and provide directions for what they will need to do at the poster. Ask each group to appoint one person as a recorder for the group. Give the recorder the marker. Each group should have a different color marker.
- Let students know that they will have a particular length of time at each poster. Explain that when you signal they will rotate to the next poster and continue to add information at that poster.
- At the end of the time period, tell students to cap their markers. Remind them to keep their markers, and ask them to rotate to the next poster. Have them rotate until each group returns to their original poster.

Carousel Brainstorm Secret:

When the activity is complete, use a Gallery Walk strategy to share the information from the posters. A Gallery Walk is when students walk around with a partner or in a small group to discuss what has been recorded on the posters, similarly to the way people would walk around discussing the art at an art gallery.

Setting the Record Straight - Clarifying Information about Sexual Health

Teacher Resource 5: Lesson Vocabulary

antibiotic

Definition: A substance that fights bacteria

Context: Antibiotics, like Tetracycline or Erythromycin, can cure chlamydia.

bacteria

Definition: Tiny one-celled organisms present throughout the environment that require a microscope to be seen

Context: While not all bacteria are harmful, some cause disease. Examples of bacterial disease include diphtheria, pertussis, tetanus, Haemophilus influenza and pneumococcus (pneumonia).

bacterium

Definition: The singular version of the word bacteria

Context: Syphilis is a sexually transmitted infection caused by the bacterium *Treponema pallidum*.

carrier

Definition: A person or animal that harbors a specific infectious agent without visible symptoms of the disease. A carrier acts as a potential source of infection.

Context: There are an estimated 1-1.4 million carriers of hepatitis B in the U.S.

cirrhosis

Definition: Irreversible scarring of the liver, due to ongoing damage, which may affect liver function. Cirrhosis can lead to liver failure and even death.

Context: HBV can result in serious illness, such as cirrhosis of the liver.

contact

Definition: Exposure to a source of an infection, or a person so exposed

Context: If symptoms of gonorrhea develop, they usually appear within two to 10 days after genital contact with an infected partner.

cure

Definition: A means of healing or restoring to health

Context: The bad news is that there is no cure for genital herpes.

Setting the Record Straight - Clarifying Information about Sexual Health

Teacher Resource 5: Lesson Vocabulary

disease

Definition: A condition of the living animal or plant body or of one of its parts that impairs normal functioning and is typically manifested by distinguishing signs and symptoms.

Context: Some diseases can be prevented with vaccines.

diagnose

Definition: To recognize (as a disease) by signs and symptoms.

Context: Syphilis is diagnosed by a doctor through blood tests.

ectoparasite

Definition: A parasite that lives on the exterior of its host

Context: A parasite, such as a flea, lives on the exterior of another organism.

epidemic

Definition: The occurrence of more cases of disease than expected in a given area or among a specific group of people over a particular period of time

Context: The epidemic has now spread to every part of the United States.

exposure

Definition: Coming in direct contact with an agent that might cause a disease or infectious process

Context: Mixing sex with alcohol or other drugs increases the chances of unintended pregnancy and exposure to sexually transmitted infections.

fungus

Definition: Any of a diverse group of eukaryotic, single-celled or multinucleate organisms that live by decomposing and absorbing the organic material in which they grow

Context: Ringworm is a disease caused by a fungus.

immunity

Definition: Protection against a disease. There are two types of immunity, passive and active. Immunity is indicated by the presence of antibodies in the blood and can usually be determined with a laboratory test.

Context: Without evidence of immunity, it is beneficial to give the vaccine within 3-5 days of exposure.

Setting the Record Straight - Clarifying Information about Sexual Health

Teacher Resource 5: Lesson Vocabulary

infection

Definition: The state produced by the establishment of an infective agent in or on a suitable host

Context: Pelvic inflammatory disease can result from a sexually transmitted infection.

intravenous

Definition: Situated, performed, or occurring within or entering by way of a vein

Context: Both men and women have acquired HIV through sex with an intravenous drug user.

lesion

Definition: Any localized, defined area of diseased tissue, as a spot, canker, blister, or scab

Context: Approximately 10,000 women each year in the U.S. will develop cervical cancer, and about 500,000 women will experience serious cervical lesions that may need treatment.

liver

Definition: A large reddish-brown human organ located in the upper right portion of the abdominal cavity, it performs several vital functions, which are necessary for survival.

Context: Hepatitis is a virus that causes inflammation of the liver.

organism

Definition: A form of life. A complex structure of interdependent and subordinate elements whose relations and properties are largely determined by their function in the whole.

Context: The organism has both an inner (cytoplasmic) and outer membrane, separated by a cell wall.

prevent

Definition: To keep from occurring; avert; or hinder

Context: Abstinence is the only 100 percent effective way to prevent unplanned pregnancy and sexually transmitted infections.

protozoan

Definition: Any of a large group of single-celled, usually microscopic, eukaryotic organisms

Context: Amoebas, ciliates, flagellates, and sporozoans are protozoans.

Setting the Record Straight - Clarifying Information about Sexual Health

Teacher Resource 5: Lesson Vocabulary

risk

Definition: The probability that an event will occur

Context: Using condoms can lower the risk of getting a sexually transmitted infection.

syndrome

Definition: A group of symptoms that together are characteristic of a specific disorder or disease

Context: Chronic fatigue syndrome shares symptoms with many other disorders.

symptom

Definition: A sign or an indication of disorder or disease, especially when experienced by an individual as a change from normal function, sensation, or appearance

Context: Genital herpes is one of those tricky infections that often have no symptoms.

vaccine

Definition: A substance that protects a body against a disease by causing the body's immune system to produce antibodies

Context: Some vaccines provide lifelong protection against infection, while others require several doses given at regular intervals.

universal precautions

Definition: Recommendations issued by the CDC to minimize the risk of transmission of bloodborne pathogens, particularly HIV and HBV

Context: Universal precautions are intended to prevent skin exposures of health-care workers to bloodborne pathogens.

virus

Definition: An infectious agent that multiplies within cells and causes diseases such as chickenpox, measles, mumps, rubella, pertussis and hepatitis. Antibiotics, the drugs used to kill bacteria, do not affect viruses.

Context: Viruses are a major cause of disease and can infect human beings with measles, influenza, and the common cold.

Setting the Record Straight - Clarifying Information about Sexual Health

Teacher Resource 6: Group Work Evaluation Rubric

Directions: Explain the rubric to the class before the activity begins. First, have students complete a self-evaluation using the first Group Work Rubric on the sheet. Second, give the sheet to a group member to complete the second rubric. Finally, based on anecdotal observations, the teacher completes the third rubric on the page.

STUDENT NAME _____

SELF EVALUATION

Carousel Activity	Point Total ____/12				
	1	2	3	4	Total
Contributed to the group’s response to the statements	never	rarely	often	always	
Listened to others, offered ideas and shared information	never	rarely	often	always	
Encouraged and supported teammates	never	rarely	often	always	

PEER EVALUATION

Carousel Activity	Point Total ____/12				
	1	2	3	4	Total
Contributed to the group’s response to the statements	never	rarely	often	always	
Listened to others, offered ideas and shared information	never	rarely	often	always	
Encouraged and supported teammates	never	rarely	often	always	

TEACHER EVALUATION

Carousel Activity	Point Total ____/12				
	1	2	3	4	Total
Contributed to the group’s response to the statements	never	rarely	often	always	
Listened to others, offered ideas and shared information	never	rarely	often	always	
Encouraged and supported teammates	never	rarely	often	always	

Evaluation Point Total ____/36

Setting the Record Straight - Clarifying Information about Sexual Health
Teacher Resource 7: Carousel Master

Name of STI:	Prediction	Agree/Disagree
	Opinion of the 1 st Group to visit Poster	Opinion of other groups in relation to the answer of first group
Is it a viral or bacterial infection?		
Are there always symptoms?		
Is there a cure?		
Are condoms very effective at preventing it?		
Is it life threatening?		
Estimate how many people in the U.S. are infected each year.		

TEEN SEXUAL HEALTH AND VACCINE EDUCATION

A CURRICULUM PROJECT TO SUPPORT AND PROMOTE
THE PREVENTION OF SEXUALLY TRANSMITTED INFECTIONS

Setting the Record Straight - Clarifying Information about Sexual Health

Teacher Resource 7: Carousel Master

Carousel Answer Key

	HPV/ Genital Warts	HIV/AIDS	Hepatitis B	Herpes	Gonorrhea	Syphilis	Chlamydia
Is it a viral or bacterial infection?	Virus	Virus	Virus	Virus	Bacteria	Bacteria	Bacteria
Are there always symptoms?	No – Often there are none, sometimes the warts are visible	No – Most of the time there are none	No – Most of the time there are none	No – Often there are none, sometimes there are sores	No – Often there are none, sometimes there is discharge, pain, and burning	No – Often there are none, sometimes there are sores	No – Often there are none, sometimes there is discharge, pain, and burning
Is there a cure? (viral doesn't have cure/bacteria does)	No	No	No	No	Yes – Antibiotics can cure it, but there are some drug resistant strains, making treatment more difficult	Yes – Penicillin can cure those who have been infected for less than a year	Yes - Antibiotics can cure it
Are condoms effective at reducing the risk of becoming infected?	No – Condoms might not cover the infected area	Yes – When used correctly, condoms can reduce the risk	Yes – When used correctly, condoms can reduce the risk	No – Condoms might not cover the infected area. To prevent, you need to refrain from skin to skin	Yes – When used correctly, condoms can reduce the risk	No – Condoms might not cover the infected area	Yes – When used correctly, condoms can reduce the risk

TEEN SEXUAL HEALTH AND VACCINE EDUCATION

A CURRICULUM PROJECT TO SUPPORT AND PROMOTE
THE PREVENTION OF SEXUALLY TRANSMITTED INFECTIONS

Setting the Record Straight - Clarifying Information about Sexual Health
Teacher Resource 7: Carousel Master

	HPV/ Genital Warts	HIV/AIDS	Hepatitis B	Herpes	Gonorrhea	Syphilis	Chlamydia
				contact while it is in the active phase. Also, herpes can still be spread without the presence of sores			
Is it life threatening?	Yes – Most people clear HPV, but some types of HPV can lead to cervical cancer – which can be fatal. There is a vaccine that prevents the types of HPV that cause most cancers. Genital warts are from a type of HPV that do not turn into cancer	Yes – AIDS severely weakens the body's ability to fight infections and certain cancers	Yes – If your body does not clear the disease on its own it can lead to serious liver problems like cancer. There is a vaccine to prevent it	No – but having herpes doubles your risk for getting HIV	No – When left untreated it can lead to pelvic inflammatory disease in women, which can lead to infertility. In men, it can lead to chronic pain with urination	Yes – If it is left untreated it can progress to a third stage and be fatal. Most of the cases never reach that point since it can be cured in Stage 1 or 2 with antibiotics	No – When left untreated it can lead to pelvic inflammatory disease in women, which can lead to infertility. In men, it can lead to chronic pain with urination

TEEN SEXUAL HEALTH AND VACCINE EDUCATION

A CURRICULUM PROJECT TO SUPPORT AND PROMOTE
THE PREVENTION OF SEXUALLY TRANSMITTED INFECTIONS

Setting the Record Straight - Clarifying Information about Sexual Health Teacher Resource 7: Carousel Master

	HPV/ Genital Warts	HIV/AIDS	Hepatitis B	Herpes	Gonorrhea	Syphilis	Chlamydia
Estimate how many people in the U.S. are infected each year.	6 million	35,000 *1,000,000 are living with AIDS	77,000	1 million *Almost 9 in 10 people are unaware they have it	700,000	10,000	3 million

Setting the Record Straight - Clarifying Information about Sexual Health

Teacher Resource 8: STI Quick Write

NAME: _____ DATE: _____

Directions: For each of the STIs we learned about today, choose two of the following questions.

1. Why is this infection relevant?
2. What causes the infection?
3. What are the symptoms?
4. What are the consequences?
5. How is it prevented?

HPV

I am answering questions _____ and _____.

HIV/AIDS

I am answering questions _____ and _____.

Herpes

I am answering questions _____ and _____.

Setting the Record Straight - Clarifying Information about Sexual Health

Teacher Resource 8: STI Quick Write

Hepatitis B

I am answering questions _____ and _____.

Gonorrhea

I am answering questions _____ and _____.

Syphilis

I am answering questions _____ and _____.

Chlamydia

I am answering questions _____ and _____.

Setting the Record Straight - Clarifying Information about Sexual Health

Teacher Resource 9: Reference List

American Cancer Society <<http://www.cancer.org/docroot/home/index.asp>>

Immunization Action Coalition <<http://www.vaccineinformation.org/>>

Kagan, Spencer. (1992). *Cooperative Learning*. Resources for Teachers.

Kids Health Organization <<http://kidshealth.org>>

Murray, Bonnie P. (2002). *The New Teacher's Complete Sourcebook: Grades K-4*. Scholastic Books.

National Education Association Health Information Network <<http://www.neahin.org>>

Sexuality Information and Education Council of the United States <<http://www.siecus.org/index.cfm>>

U.S. Centers for Disease Control and Prevention <<http://www.cdc.gov/>>

U.S. Department of Health and Human Services <<http://www.hhs.gov/diseases/>>

Wong, Harry K. (1998). *The First Days of School: How to Be an Effective Teacher*. Harry K. Wong Publications Inc.

World Health Organization <www.who.org/>

Lesson Plan - Sharing What We Know about Sexual Health

Overview and Purpose: The purpose of this lesson is to promote teen sexual health and the prevention of sexually transmitted infections (STIs) by educating students through interactive activities designed to build knowledge and open communication about this topic. This lesson will encourage students to be accurate sources of information for their peers and responsible role models by protecting themselves and encouraging others to do the same.

Grade Level: Grades 9-12

Estimated Time Allotment: five class periods

(based on 50-minute class periods, with 45 minutes of instructional time for this lesson; specific durations of activities are provided within the Lesson Procedures section)

Curriculum Focus: Health

Learning Objectives

The student will be able to...

- list seven common Sexually Transmitted Infections (STIs)
- describe the relevance, symptoms, treatment, and prevention of seven common STIs
- utilize prior knowledge to answer questions about STIs
- read, comprehend, identify, and explain important facts about STIs
- collaborate with other students

Standards Addressed

Health

American Alliance for Health, Physical Education, Recreation and Dance (AAHPERD) and American Association for Health Education (AAHE), National Health Education Standards

Health Education Standard 1: Students will comprehend concepts related to health promotion and disease prevention

1.12.5. (9-12) Propose ways to reduce or prevent injuries and health problems

1.12.8. (9-12) Analyze personal susceptibility to injury, illness or death if engaging in unhealthy behaviors

Health Education Standard 2: Students will analyze the influence of family, peers, culture, media, technology and other factors on health behavior

2.12.10. (9-12) Analyze how public health policies and government regulations can influence health promotion and disease prevention

Lesson Plan - Sharing What We Know about Sexual Health

Health Education Standard 3: Students will demonstrate the ability to access valid information and products and services to enhance health

3.5.2 (3-5) Locate resources from home, school and community that provide valid health information

3.8.2. (6-8) Access valid health information from home, school, and community

Health Education Standard 4: Students will demonstrate the ability to use intercommunication skills to enhance health and avoid or reduce health risks

4.12.1. (9-12) Utilize skills for communicating effectively with family, peers, and others to enhance health

Health Education Standard 7: Students will demonstrate the ability to practice health-enhancing behaviors and avoid or reduce health risks

7.12.1. (9-12) Analyze the role of individual responsibility in enhancing health

Health Education Standard 8: Students will demonstrate the ability to advocate for personal, family and community health

8.5.1 (3-5) Express opinions and give accurate information about health issues

Mid-Continent Research for Education and Learning (McREL) Standards, Curriculum Standards for Health Education Content Standard 10. Understands the fundamental concepts of growth and development Level IV (Grades 9-12) Benchmark 2. Understands how physical, mental, social, and cultural factors influence attitudes and behaviors regarding sexuality

Knowledge/skill statements

- Understands how physical factors influence attitudes regarding sexuality
- Understands how physical factors influence behaviors regarding sexuality
- Understands how mental factors influence attitudes regarding sexuality
- Understands how mental factors influence behaviors regarding sexuality
- Understands how social factors influence attitudes regarding sexuality
- Understands how social factors influence behaviors regarding sexuality
- Understands how cultural factors influence attitudes regarding sexuality

Content Standard 11. Knows health risk factors and techniques to manage and reduce those risks Level IV (Grades 9-12) Benchmark 3. Knows how to make positive health decisions related to injury, tobacco, nutrition, physical activity, sexuality, and alcohol and other drugs

Knowledge/skill statements

- Knows how to make positive health decisions related to sexuality

Sexuality Information and Education Council of the United States, Guidelines for Comprehensive Sexuality Education

Key Concept 4: Sexuality is a central part of being human, and individuals express their sexuality in a variety of ways.

Topic 4: Sexual Abstinence

Lesson Plan - Sharing What We Know about Sexual Health

Level 2: Children are not physically or emotionally ready for sexual intercourse and other sexual behaviors

Level 3: Abstinence from intercourse has benefits for teenagers and adults.

Level 3: Sexual abstinence is the best method to prevent pregnancy and STDs/HIV

Level 3: Teenagers considering sexual activity should talk to a parent or other trusted adult about their decisions, contraception, and disease prevention

Key Concept 5: The promotion of sexual health requires specific information and attitudes to avoid unwanted consequences of sexual behavior

Topic 1: Reproductive Health - Men and women must care for their reproductive health

Level 3: Individuals who suspect something is wrong with their sexual or reproductive organs, such as genital discomfort or itching or a lump in a breast or testicle, should seek medical attention immediately

Level 3: Untreated STDs during adolescence can be especially dangerous to a boy's or girl's future reproductive capability

Topic 2: Contraception

Level 3: Some methods of contraception, such as condoms, can also prevent the transmission of STDs/HIV. The most effective methods of contraception, such as the Pill, injection, and the birth control patch do not help prevent the transmission of STDs/HIV. Couples who want to reduce their risk for both pregnancy and STDs/HIV need to use male or female condoms along with another effective method of contraception.

Level 4: When choosing contraception, people must weigh the advantages and disadvantages of a particular method as well as its effectiveness in preventing pregnancy and STDs/HIV

Topic 5: Sexually Transmitted Diseases

Level 2: STDs are sometimes referred to as sexually transmitted infections or STIs. STDs include diseases such as gonorrhea, syphilis, HIV infection, chlamydia, genital warts, and herpes. The viruses and bacteria that cause STDs are usually found in the semen, vaginal fluids, and blood of an infected person. STDs are most commonly passed during sexual contact, but some can also be passed by sharing unsterilized needles or from a mother to child during pregnancy, birth, or breastfeeding. Abstinence from sexual activity is an effective way to avoid STDs. STDs can be passed during vaginal, oral, or anal intercourse. STDs can be transmitted even if the person does not have signs of infection. Anyone, regardless of age or sexual orientation, can get STDs if they have sexual contact with an infected person. Uninfected individuals who engage in sexual behavior cannot get an STD from each other. A person can have more than one STD at a time and can get an STD more than once. Those STDs caused by bacteria, such as gonorrhea, Chlamydia, or syphilis, can be cured with prescription medication. Those STDs caused by viruses, such as HIV, human papillomavirus (one type of HPV causes genital warts), herpes, and hepatitis, can be treated but not cured.

Level 3: Many teenagers who have vaginal, oral, or anal intercourse will become infected with an STD. The major symptoms of most STDs include genital discharge, sores on the genitals or mouth, abdominal pain, painful urination, skin changes, genital itching, or sore throat. The symptoms of STDs can be hidden, absent, or unnoticed, especially in women.

Lesson Plan - Sharing What We Know about Sexual Health

One cannot determine who has an STD by just looking at that person or at that person's genitals. The only sure way to know if someone is infected with an STD is from testing and a medical exam. Individuals suspecting that they have an STD should stop having sexual intercourse, promptly go to a healthcare provider for testing, and refer sexual partners to a healthcare provider as well. Untreated STDs can lead to serious health problems, including infertility. Hepatitis B is the only STD that can be prevented by a vaccine. Proper use of latex condoms, along with water-based lubricants, can greatly reduce but not eliminate the chance of getting an STD.

Level 4: Individuals can help fight STDs by serving as an accurate source of information, by being a responsible role model, and by encouraging others to protect themselves

Curriculum Integrations

Reading and Language Arts, International Reading Association and National Council of Teachers of English Standards, Standards for the English Language Arts

3: Students apply a wide range of strategies to comprehend, interpret, evaluate, and appreciate texts. They draw on their prior experience, their interactions with other readers and writers, their knowledge of word meaning and of other texts, their word identification strategies, and their understanding of textual features (e.g., sound-letter correspondence, sentence structure, context, graphics)

4: Students adjust their use of spoken, written, and visual language (e.g., conventions, style, vocabulary) to communicate effectively with a variety of audiences and for different purposes

5: Students employ a wide range of strategies as they write and use different writing process elements appropriately to communicate with different audiences for a variety of purposes

7: Students conduct research on issues and interests by generating ideas and questions, and by posing problems. They gather, evaluate, and synthesize data from a variety of sources (e.g., print and nonprint texts, artifacts, people) to communicate their discoveries in ways that suit their purpose and audience

8: Students use a variety of technological and information resources (e.g., libraries, databases, computer networks, video) to gather and synthesize information and to create and communicate knowledge

11: Students participate as knowledgeable, reflective, creative, and critical members of a variety of literacy communities

12: Students use spoken, written, and visual language to accomplish their own purposes (e.g., for learning, enjoyment, persuasion, and the exchange of information)

Lesson Procedures for Teacher

Before teaching the Lesson

Teacher Background: Content Background and Resources, Instructional Strategy Overview and Lesson Vocabulary (Teacher Resources 1-3)

Lesson Plan - Sharing What We Know about Sexual Health

Teacher Preparation:

Materials and Planning Notes

Prepare for the students to work in small groups

Prepare for students to conduct Internet research (bookmark websites for each group to conduct research, test websites and links to be sure that the sites are not blocked or URL's have not changed) (Teacher Resource 1)

Prepare, Assemble and Review: Sexual Health Journals (Student Resource 2), one packet per student

Prepare to list common STIs (Teacher Resource 5) on a blank overhead, chart paper or the board

Prepare, Assemble and Review: Jigsaw Article Packets (Student Resource 1), one packet per student

Additional Materials: computers with Internet access, chart paper, markers, tape

During teaching of the Lesson

Opening Activity – Modified KWL Chart

15 minutes

1. Explain that you want to begin this lesson by giving students time to reflect about the topic of sexually transmitted infections on their own. Ask them to think about what they KNOW, WANT to know, and how they might LEARN it. Direct students to record their answers in their Sexual Health Journal (Student Resource 2).
2. Give students the journals and provide time for them to think and record. Ask them to record on page 1 of the journal in the left hand column titled “Then”.

Activate Prior Knowledge – Whole Class Discussion

30 minutes

1. Explain to the students that you asked them to complete the KWL because as a class you will be spending more time learning about sexually transmitted infections. The KWL is a way to get them thinking about what they know and what/need to know about this important topic.
2. Define STIs (sexually transmitted infections). Ask the students to suggest a meaning for this acronym. Using their input, provide a common meaning for the students.
(Preparation note: Use Teacher Resource 1 - Content Background and Resources to become familiar and well versed with this discussion material. As the discussion continues, supplement the students' knowledge with the necessary background information to begin this lesson.)

Lesson Plan - Sharing What We Know about Sexual Health

3. Conduct a whole class discussion to develop a list STIs. The steps to facilitate the discussion are provided on Teacher Resource 4.
4. Once the discussion is complete and there is a list of STIs on the board, check mark the seven STIs the students will be learning about during this lesson (hepatitis B, HIV/AIDS, syphilis, human papillomavirus (HPV) and genital warts, chlamydia, gonorrhea and genital herpes). Ask students why they think you marked those seven. Explain to students that the seven you marked are the most common STIs among teenagers.
5. Transition to the learning activity by explaining to students that they will be participating in several activities with their classmates to learn more about these infections.

Learning Activities – Modified Jigsaw with Tellers and Travelers 135 minutes

1. Have the students sit in small groups.
2. Explain the Modified Jigsaw procedures to the students.
 - Each group will be responsible for learning about an assigned STI by reading an article and researching additional information on the Internet (Student Resource 1).
 - Each group will develop a presentation about their assigned STI.
 - One person in each group will be identified as the group’s “Teller”. This person will be sharing the group’s presentation with the rest of the class through an activity called Tellers and Travelers.

Assign each group a number (1 – 7). Tell the students that they will independently read whatever STI article number their group has been assigned. Pass out the Jigsaw Article Packets (Student Resource 1). Have the students read **ONLY their assigned article** independently. Allow time for all students to complete the reading (approximately five minutes).

3. After groups are finished reading the STI article, have them meet to develop a “Learning Plan” for their group to follow. Each article includes a Web Resources section for the students to do further research.

Example 1 – The students may choose to brainstorm a list of questions about HPV to which they would like to find answers. They might assign each group member, or pair of members, one of the questions. Each individual or pair would then visit all of the listed websites to answer the question assigned to them. After the answers were found, students would share answers with each other.

Example 2 – The students may choose to work alone or with sub-partner groups within their small group. Individuals or partners can visit each of the websites or one assigned website, taking notes to share with the small group.

Lesson Plan - Sharing What We Know about Sexual Health

Preparation note: If you can, bookmark these websites for the students (Teacher Resource 1). Tell the students to plan within their groups who will visit each website and what they will need to find out.

4. Have small groups continue to work together using the “Learning Plan” they created.
5. After the research is complete, the groups continue to work together to design a 10-minute presentation about the STI they are studying. (They can use markers and chart paper to create a visual aid for their presentation). After the presentations are complete, have students identify one person as their group’s “Teller”. This person will be sharing the group’s presentation with the rest of the class through an activity called Tellers and Travelers. *(Please note: Try to make sure the students do not pick their group’s tellers before this point; this will ensure that all of the group’s members participate. In some cases, if students know too far ahead of time that they will not be the one sharing, they will “tune out” during the group learning process).*
6. Once groups have selected “Tellers”, have each “Teller” give his or her own group the designed presentation for practice.
7. Introduce and carry out the Tellers and Travelers activity:
 - Each small group becomes a group of “Travelers”.
 - The “Travelers” rotate to visit each “Teller” (six rotations – 10 minutes with each “Teller”).
 - They take their Sexual Health Journal (Student Resource 2) with them to each “Teller” to take notes.
 - On the seventh rotation (30 minutes), “Travelers” return to their group’s “Teller”.
 - Now that they are back to their original small groups, the “Travelers” will tell the “Tellers” about their travels. (Using the notes in their journal, the students who visited the other “Tellers” to learn about each of the STIs will now teach the person who stayed back to be their group’s “Teller”. The “Teller” will take notes in his or her own journal during this process.

Closing Activity – Modified KWL Chart and Give One - Take One 45 minutes

1. Explain that you want to end this lesson by giving students time to reflect on what they have learned about the topic of sexually transmitted infections. Ask them to think about what they now KNOW, still WANT to know, and how they might LEARN the answers to the questions they still have. Direct students to record their answers in their Sexual Health Journal (Student Resource 2).
2. Give students the journals and provide time for them to think and record. Ask them to record on page 1 of the journal in the right hand column titled “Now”.

Lesson Plan - Sharing What We Know about Sexual Health

3. Explain that now that the students have had a chance to think independently, you would like to ask them to share.
4. Introduce and conduct the next closing activity, Give One – Take One.
 - The students will turn to the last page in their journal and record the three most important ideas they will take away from this lesson in the top three boxes on the grid.
 - Then they will have 10 minutes to visit with their classmates to fill in the final three boxes. They will find a person, and “Give One” idea to them from the top of the chart and “Take One” idea from their top three. Explain to students, “This is done by sharing one of your top ideas with your partner and then recording what they say when they share one of their top ideas with you.” To complete this chart, they will repeat this process two more times, meeting with two more people.

Supplemental Materials

Resources to accompany this lesson plan have been created and are provided after this section. This lesson plan contains the following supplemental materials (as referenced throughout this section).

Student Resources

Student Resource 1: Jigsaw Article Packet: Teen Sexual Health

Student Resource 2: My Sexual Health Journal

Teacher Resources

Teacher Resource 1: Content Background and Resources for Teen Sexual Health

Teacher Resource 2: Instructional Strategy Overview

Teacher Resource 3: Lesson Vocabulary

Teacher Resource 4: Activating Prior Knowledge/Leading a Class Discussion

Teacher Resource 5: List of Sexually Transmitted Infections

Teacher Resource 6: Group Work Evaluation Rubric

Teacher Resource 7: Reference List

Modifications

- Assign the “Teller” in each group instead of having the students decide.
- Rotate the “Teller” role.
- Conduct a traditional Jigsaw instead of a Modified Jigsaw; have each group develop a presentation about their assigned STI. Students can use the journals to record notes during each group presentation.

Lesson Plan - Sharing What We Know about Sexual Health

Assessment

- Assessment of Learning Process: Anecdotally observe students during class and small group discussion.
- Assessment of Group Skills: Informally observe students working together. If appropriate, use the Group Work Evaluation Rubric (Teacher Resource 6) or create your own.
- Assessment of Content Knowledge: Evaluate students' written work products from this lesson (My Sexual Health Journal, Student Resource 2). Observe the students during presentations and information sharing.

After teaching the Lesson

Extension and Additional Activities (Take Home Component)

- Plan to teach this lesson as well as other activities in honor of National STD Awareness Month in April.
- Display the posters from the Carousel "Teller". Have small groups create quizzes or "scavenger hunts" with questions for which the answers could be found on their posters. Have the students exchange quizzes with other groups and/or compile the "scavenger hunts" into one for individual students to complete.
- Have students create billboards promoting awareness about the STI their group studied.
- Teach another subject using KWL, Tellers and Travelers, or Give One – Take One strategies.

Lesson At – A – Glance

Opening Activity – Modified KWL Chart and Whole Class Discussion	45 minutes
Learning Activities – Modified Jigsaw with Tellers and Travelers	135 minutes
Closing Activity – Modified KWL Chart and Give One - Take One	45 minutes

Sharing What We Know about Sexual Health

Student Resource 1: Jigsaw Article Packet

Teen Sexual Health

Group 1

HPV

HPV (Human Papillomavirus) is a common virus passed on through genital contact. HPV is the most common sexually transmitted virus in the United States. Over 6 million people get HPV each year, and most new infections are in 15–24 year olds. There are about 100 types of HPV, 40 of which can impact the genital areas of men and women.

Most types of HPV cause no symptoms and go away on their own. Some types of HPV can cause cervical cancer and other less common cancers as well. These types of HPV are known as high risk because they can last for many years and cause changes in the cells of the cervix. When left untreated, these cell changes can lead to cancer. Other types of HPV can cause warts (called genital warts) on the genital areas of men and women. These types of HPV do not lead to cancer. The types of

HPV that can cause cervical cancer are not the same as the types that can cause genital warts.

Anyone who has ever had genital contact with another person can get HPV. You do not need to have intercourse to spread HPV. Any skin-to-skin contact with the genital area of another person can allow HPV to spread. A person is more likely to get HPV if they have sex at any early age, have many sex partners, or have a sex partner who has had many partners. Since HPV often causes no symptoms, both men and women can pass it on without knowing it.

There is no cure for HPV. There are treatment options for the health problems HPV causes like genital warts and cervical cancer. Because treatment is more successful with early detection, it is important to get regular Pap tests to detect any changes in the cervix caused by HPV. Doctors recommend that young women begin getting annual Pap tests three years after first sexual contact or at age 21 – whichever comes first.

Cervical cancer is a cancer that begins in a woman's cervix, the opening to the uterus or womb. Approximately 10,000 women each year in the U.S. will develop cervical cancer, and about 500,000 women will experience serious cervical lesions that may need treatment. Vaccination against HPV makes it much less likely that a woman will develop cervical cancer and other HPV-related illnesses. With early diagnosis, cervical cancer can be treated and cured.

Other types of HPV cause genital warts. The warts may disappear or may develop a fleshy, small raised growth with a cauliflower-like appearance. Genital warts are typically treated with an ointment that is applied to the skin as well as by freezing and/or laser treatment.

There is currently one HPV vaccine on the market to protect against infection with the types of HPV that cause most, but not all, cases of cervical cancer and genital warts. Others are in development.

Sharing What We Know about Sexual Health

Student Resource 1: Jigsaw Article Packet

Teen Sexual Health

Group 1

HPV

The U.S. Centers for Disease Control and Prevention recommends that the vaccine be routinely given to all females ages 11-12 with “catch up” vaccination for those ages 13-26. Research shows that women who are already sexually active can still get some benefit from vaccination,

but the vaccine protects best in females who have never been exposed to any type of HPV. Therefore, the vaccine is most effective in girls and young women who receive it before becoming sexually active. Research is ongoing to see if the vaccine is effective in males.

In addition to the HPV vaccine, there are other steps to lower the chances of getting HPV. A person making the decision to be sexually

active should limit the number of sexual partners and choose a partner who has had no or few sex partners. Condoms do not completely protect against HPV. Areas not covered by a condom can still be exposed to the virus. Since the virus can be transmitted from skin-to-skin contact, when genital warts are visible, people should abstain from any genital contact. The best way to ensure protection is to practice abstinence.

WEB RESOURCES

additional research for your project...

http://www.neahin.org/HPV/Cervical_Cancer/Images/NEA%20Cervical%20Cancer%20Brochure.pdf

<http://www.cdc.gov/std/HPV/STDFact-HPV.htm>

<http://www.sexedlibrary.org/stds.html#humanpapilloma>

http://www.ashastd.org/hpv/hpv_overview.cfm

http://www.ashastd.org/learn/learn_hpv_warts.cfm

<http://www.teenwire.com/topics/infections-and-diseases.php>

<http://www.fda.gov/womens/getthefacts/hpv.html>

http://www3.niaid.nih.gov/healthscience/healthtopics/human_papillomavirus/index.htm

http://www.cancer.org/docroot/CRI/CRI_2_1x.asp?rnav=criov&dt=8

Sharing What We Know about Sexual Health

Student Resource 1: Jigsaw Article Packet

Teen Sexual Health

Group 2

Chlamydia

Chlamydia is a sexually transmitted infection caused by the bacterium *Chlamydia trachomatis*. It is the most frequently reported infectious disease in the U.S., with an estimated three million new infections each year.

If symptoms occur at all, they are usually mild and appear one to three weeks after exposure. Men sometimes have a whitish yellow discharge from the penis, redness at the tip of the penis, a frequent urge to urinate or a burning sensation while urinating.

Chlamydia is spread through genital contact during sexual activity, when fluids containing the bacteria come in contact with mucous membranes. A person infected with chlamydia may also

develop conjunctivitis if s/he touches her/his eyes with a contaminated hand.

A test from the doctor is needed to confirm chlamydia. Antibiotics, like Tetracycline or Erythromycin, can cure chlamydia. An infected person should make sure to take the full course of the treatment even if the symptoms disappear earlier. It is also important that all the infected person's sexual partners be tested for chlamydia and treated to prevent the further spread of the disease.

Since chlamydia often has no symptoms, it frequently may be diagnosed and treated only when serious complications develop. One of the most common complications associated with chlamydia is pelvic inflammatory disease (PID). PID is the inflammation or infection of the fallopian tubes or ovaries in women; it develops when the chlamydia infection spreads to

the uterine cavity and fallopian tubes. Symptoms of PID include low abdominal pain, vaginal discharge, and fever. It is diagnosed by a doctor and treated with antibiotics. PID has the potential for serious complications. Hospitalization may be required in severe cases. It is one of the leading causes of infertility in women of childbearing age. In rare cases, men infected with chlamydia may also develop epididymitis, an inflammation of the scrotal tubes that can cause sterility.

There are steps to lower the chances of getting chlamydia. A person making the decision to be sexually active should limit the number of sexual partners and choose a partner who has had no or few sex partners. Condoms (used correctly) can reduce the spread of chlamydia. The surest way to prevent chlamydia is to not have sex.

Sharing What We Know about Sexual Health

Student Resource 1: Jigsaw Article Packet

Teen Sexual Health

Group 2

Chlamydia

WEB RESOURCES

additional research for your project...

<http://www.cdc.gov/std/Chlamydia/STDFact-Chlamydia.htm>

<http://www.sexedlibrary.org/stds.html#chlamydia>

http://www.ashastd.org/learn/learn_chlamydia_facts.cfm

<http://www3.niaid.nih.gov/topics//chlamydia/index.htm>

<http://www.cdc.gov/std/chlamydia/the-facts/default.htm>

<http://www.teenwire.com/topics/infections-and-diseases.php>

Sharing What We Know about Sexual Health

Student Resource 1: Jigsaw Article Packet

Teen Sexual Health

Group 3

Gonorrhea

Gonorrhea is a sexually transmitted infection caused by the bacterium *Neisseria gonorrhoeae*. Gonorrhea is the second most frequently reported STI. Nearly 700,000 people in the U.S. are infected with gonorrhea each year. Young people age's 15-29 make up 75% of all reported cases.

Men and women with gonorrhea have different symptoms. The most common symptoms of gonorrhea are a discharge from the vagina or penis and painful or difficult urination. Many women who are infected have no symptoms of the disease. Men, on the other hand, are more likely to show symptoms. If symptoms of gonorrhea develop, they usually appear within two to 10 days after genital contact with an infected partner, although a small percentage of patients may be infected for several months without showing symptoms. Symptoms of rectal infection include discharge, anal itching, and painful bowel movements.

Gonorrhea is spread through genital contact during sexual activity. The bacterium that causes gonorrhea

thrives in moist, warm areas of the body including the reproductive tract, the oral cavity, and the rectum. Gonorrhea can also be spread to the mouth, eyes, and throat.

A test from the doctor is needed to confirm gonorrhea. Antibiotics can cure gonorrhea. An infected person should be sure to take the full course of treatment even if the symptoms disappear earlier. Drug resistant strains of the disease are increasingly making treatment more difficult.

Since gonorrhea has few symptoms for women, it is often diagnosed and treated when more serious complications develop. If a pregnant woman contracts gonorrhea early on in her pregnancy, there is an increased risk of premature labor and postpartum uterine infection. Therefore, it is recommended that pregnant women be tested for gonorrhea. An attack of gonorrhea can make a person more vulnerable to human immunodeficiency virus (HIV). HIV causes AIDS, so it is imperative that gonorrhea be detected and treated in the early stages.

One of the most common complications associated with gonorrhea is pelvic inflammatory disease (PID). PID is the inflammation or infection of the fallopian tubes or ovaries in women; it develops when the gonorrhea infection spreads to the uterine cavity and fallopian tubes. Symptoms of PID include low abdominal pain, vaginal discharge, and fever. A doctor diagnoses it during a pelvic exam.

Doctors usually prescribe oral antibiotics, but hospitalization may be required in severe cases. It is one of the leading causes of infertility in women of childbearing age.

There are steps to lower the chances of getting gonorrhea. A person making the decision to be sexually active should limit the number of sexual partners and choose a partner who has had no or few sex partners. Condoms (used correctly) can reduce the spread of gonorrhea. The surest way to prevent gonorrhea is to not have sex.

Sharing What We Know about Sexual Health
Student Resource 1: Jigsaw Article Packet

Teen Sexual Health

Group 3

Gonorrhea

WEB RESOURCES

additional research for your project...

<http://www.cdc.gov/std/Gonorrhea/STDFact-gonorrhea.htm>

<http://www.sexedlibrary.org/stds.html#gonorrhea>

http://www.ashastd.org/learn/learn_gonorrhea_fact.cfm

<http://www3.niaid.nih.gov/healthscience/healthtopics/gonorrhea/index.htm>

<http://www.cdc.gov/std/Gonorrhea/the-facts/default.htm>

<http://www.teenwire.com/topics/infections-and-diseases.php>

Sharing What We Know about Sexual Health

Student Resource 1: Jigsaw Article Packet

Teen Sexual Health

Group 4

Hepatitis B

Hepatitis is a virus that causes inflammation of the liver, resulting in liver cell damage and destruction. Five main types of the hepatitis virus have been identified. The most common type that occurs through genital contact is hepatitis B (HBV). This type of hepatitis also spreads through contaminated blood and blood products and contaminated intravenous (IV) needles. HBV can result in serious illness such as cirrhosis of the liver, liver cancer, and death. Although HBV resolves in most people, about 10 percent will develop chronic HBV. About 750,000 people are chronically infected with hepatitis B. There are 77,000 new cases each year.

The symptoms of HBV include jaundice (yellowing of skin, eyes, and mucous membranes), fatigue, abdominal pain, loss of

appetite, intermittent nausea, and vomiting. HBV is spread through the blood and bodily fluids of an infected person. More than half of all HBV infections come from sexual activity. About one-third of all people with HBV do not know they are infected. Infected pregnant women can transmit the virus to the fetus during pregnancy and at delivery. The later in pregnancy a mother contracts the virus, the greater the chance for infection in her baby.

There are steps to lower the chances of getting HBV. There is a vaccine to prevent HBV. Developed in 1982, the hepatitis B vaccine is one of the most effective ways to prevent this disease. All children should get two doses of the hepatitis B vaccine (birth and 6-18 months). Children and adolescents through 18 years of age who did not get the vaccine when they were

younger should also be vaccinated. All unvaccinated adults at risk for hepatitis B should be vaccinated as well. Other things that will lower the risk of getting HBV are to not take intravenous drugs and never share drug needles or personal care items that might have blood on them (razors, toothbrushes). A person who is thinking about getting a tattoo or body piercing should consider that the tools could have someone else's blood on them if the tattoo artist or body piercer does not follow good health practices. A person making the decision to be sexually active should limit the number of sexual partners and choose a partner who has had no or few sex partners. Condoms (used correctly) can reduce the spread of HBV. The surest way to prevent HBV is to not have sex and limit your risk of exposure to other people's blood.

Sharing What We Know about Sexual Health
Student Resource 1: Jigsaw Article Packet

Teen Sexual Health

Group 4

Hepatitis B

WEB RESOURCES

additional research for your project...

<http://www.cdc.gov/NCIDOD/diseases/hepatitis/b/index.htm>

http://www.ashastd.org/learn/learn_hepatitis.cfm

<http://www3.niaid.nih.gov/research/topics/hepatitis/>

http://kidshealth.org/teen/infections/stds/std_hepatitis.html

<http://www.teenwire.com/topics/infections-and-diseases.php>

Sharing What We Know about Sexual Health

Student Resource 1: Jigsaw Article Packet

Teen Sexual Health

Group 5

Herpes

Genital herpes is a sexually transmitted infection caused by a virus called herpes simplex virus (HSV). There are two strains of HSV. More than 50 million, or one in five, adults in the U.S. have genital herpes. Almost nine out of ten of all infected people are unaware they have genital herpes. If the number of genital herpes cases continues to rise, by the year 2025 almost 40% of all men and 50% of all women could be infected.

Herpes simplex virus (HSV) is mostly known for causing common cold sores. It is important to note that cold sores are not an indication that a person has genital herpes. Cold sores are caused by a type of the herpes virus, but, it is rarely the same virus strand that causes genital herpes. Cold sores are typically caused by herpes simplex virus type 1 (HSV1). Genital herpes is usually caused by a different strand of the virus called herpes simplex virus type 2 (HSV2). However, it is possible to transfer the different viruses to other areas of the body. HSV1 (or cold sores) can be

transferred to the genitals through oral sex. In the same way, HSV2 (or genital herpes) can be transferred to the mouth.

Genital herpes symptoms usually appear within two weeks after infection. Often a person infected with the virus does not realize that she or he has genital herpes because they do not have any visible symptoms. However, if the symptoms are visible, genital herpes can result in an outbreak of painful blisters or open sores in the genital area, i.e., in and around the vaginal area, on the penis, around the anal opening, and on the buttocks or thighs. Small red bumps appear first, develop into blisters, and then become painful open sores. Over several days, the sores become crusty and then heal without leaving a scar.

Some other symptoms that may occur with the first outbreak of genital herpes are fever, headache, muscle aches, painful or difficult urination, vaginal discharge, swollen glands in the groin area, itching or burning feeling in the genital or anal area, pain in the legs, buttocks, or

genital area, and feeling of pressure in the abdomen. Genital herpes caused by HSV type 1 is more likely to affect the lips, causing sores known as fever blisters or cold sores, but it also can infect the genital area and produce sores there.

Genital herpes is spread through skin-to-skin contact, typically with the genital area during sexual activity. Genital herpes is spread when the virus is in an active phase, even if there are no visible symptoms. Genital herpes is highly contagious. People often get genital herpes by having sexual contact with others who don't know they are infected or who are having outbreaks of genital herpes without any sores. The virus can also spread from one area to another on the same person.

A doctor can diagnose genital herpes through a Pap smear, a special culture or a blood test. It can also be diagnosed at the time of a pelvic examination if the sores are visible. The bad news is that there is no cure for genital herpes. While the sores usually disappear within two to three weeks, the virus remains in the body for life. Therefore, any treatment or prescribed medication

Sharing What We Know about Sexual Health

Student Resource 1: Jigsaw Article Packet

Teen Sexual Health

Group 5

Herpes

will only provide symptomatic relief. In addition, there are a few simple steps that an infected person can follow to speed up the healing process and prevent the spread of infection. Keep the infected area clean and dry, avoid contact with the sores, wash hands frequently, and avoid any genital contact from the onset of symptoms until sores are completely healed, the scab has fallen off, and new skin has grown over the sore site. After the first outbreak, any future outbreaks are

usually mild and last only about a week.

Genital herpes, like other infections that produce sores, increases a person's risk of getting HIV, the virus that causes AIDS. If a pregnant woman has genital herpes, she can transmit the virus to her baby, which can cause developmental disabilities or fatal infections.

If you have early signs of a herpes outbreak or visible sores, you should not have sexual intercourse or oral sex until the signs are gone and/or the sores have healed completely. Between outbreaks, using condoms during sexual intercourse may offer

some protection from transmitting the virus to your partner.

There are steps to lower the chances of getting genital herpes. A person making the decision to be sexually active should limit the number of sexual partners and choose a partner who has had no or few sex partners. Condoms are only somewhat effective in preventing genital herpes when used between outbreaks. Refraining from skin-to-skin contact with an infected person when the virus is in the active phase can prevent genital herpes. The surest way to prevent genital herpes is to not have sex. A genital herpes vaccine is currently in development.

WEB RESOURCES

additional research for your project...

<http://www.cdc.gov/std/Herpes/default.htm>

<http://www.cdc.gov/std/Herpes/the-facts/default.htm>

<http://www.cdc.gov/std/Herpes/STDFact-Herpes.htm>

<http://www.sexedlibrary.org/stds.html#herpes>

http://www.ashastd.org/herpes/herpes_overview.cfm

http://kidshealth.org/teen/infections/stds/std_herpes.html

<http://www.teenwire.com/topics/infections-and-diseases.php>

Sharing What We Know about Sexual Health

Student Resource 1: Jigsaw Article Packet

Teen Sexual Health

Group 6

Syphilis

Syphilis is a sexually transmitted infection caused by the bacterium *Treponema pallidum*. Syphilis is among the most serious of sexually transmitted infections. It advances in three stages: primary, secondary, and tertiary or late. If syphilis goes untreated, late stage syphilis can cause serious consequences. According to recent studies from the CDC, “The rate of primary and secondary syphilis — the most infectious stages of the disease — decreased throughout the 1990s, and in 2000 reached an all-time low. However, over the past six years, the syphilis rate in the United States has been increasing.” Between 2005 and 2006, the national syphilis rate increased 13.8 percent, from 2.9 to 3.3 cases per 100,000, and the number of cases increased from 8,724 to 9,756.

The bacteria gain entrance to the body through minor cuts or abrasions in the skin or mucous membranes, most often through genital contact. The disease can also be transmitted from mother to child before or during birth. In the first

stage (primary syphilis), two to twelve weeks after exposure, painless oval-shaped sores appear on the genitals, rectum or mouth. Lymph nodes near the groin or in the neck may be swollen as well. These sores disappear on their own in two to four weeks. If this stage goes untreated, the disease moves on to the second stage (secondary syphilis) one to six months later when the organism spreads into the bloodstream. This stage is characterized by symptoms like red rash, flu-like symptoms such as headache, fever, fatigue, loss of appetite, and pain in bones and joints. These symptoms also subside by themselves without treatment, but the bacteria remain in the body. The third and most serious stage (tertiary syphilis) can begin any time from one year to several decades later. Tertiary syphilis can lead to irreversible damage to the liver, bones, brain, heart and other organs. It can also cause paralysis, blindness, dementia, and death.

Syphilis is diagnosed by a doctor through blood tests. However, the results of a blood test may not show up as positive immediately after the

person has been infected, so the test often needs to be repeated. Primary and secondary syphilis can be treated with penicillin. However, if the disease progresses to the third stage, it can cause irreversible damage. A person infected with syphilis should also have regular follow-up blood tests for at least a year after treatment. In all stages of syphilis, proper treatment will cure the disease, but in late syphilis, damage already done to body organs cannot be reversed.

Syphilis has extremely serious implications. It increases the risk of transmitting and acquiring the human immunodeficiency virus (HIV), which causes AIDS. A person's joints may be affected, resulting in arthritis. Cardiovascular syphilis can cause heart disease. Neuro syphilis, can result in paralysis, blindness, senility, psychiatric problems or loss of sensation in the legs.

There are steps to lower the chances of getting syphilis. A person making the decision to be sexually active should limit the number of sexual partners and choose a partner who has had no or few sex partners. The open sores of syphilis may be visible and infectious during the active

Sharing What We Know about Sexual Health

Student Resource 1: Jigsaw Article Packet

Teen Sexual Health

Group 6

Syphilis

stages of infection. Any contact with these infectious sores and other infected tissues and bodily fluids must be avoided. Although condoms significantly reduce the risk of syphilis they do not cover the entire genital area. The surest way to prevent syphilis is to not have sex.

WEB RESOURCES

additional research for your project...

<http://www.cdc.gov/std/syphilis/default.htm>

<http://www.cdc.gov/std/Syphilis/STDFact-Syphilis.htm>

<http://www.sexedlibrary.org/stds.html#syphilis>

http://www.ashastd.org/learn/learn_syphilis_facts.cfm

<http://www3.niaid.nih.gov/healthscience/healthtopics/syphilis/default.htm>

http://kidshealth.org/teen/infections/stds/std_syphilis.html

<http://www.teenwire.com/topics/infections-and-diseases.php>

Sharing What We Know about Sexual Health

Student Resource 1: Jigsaw Article Packet

Teen Sexual Health

Group 7

HIV/AIDS

Human immunodeficiency virus (HIV) is the virus that causes AIDS (Acquired Immune Deficiency Syndrome). HIV is a virus that attacks the immune system itself. The immune system is a group of cells and organs that protect the body by fighting disease. HIV was first identified in the United States in 1981; it took scientists several years to discover how HIV was transmitted between humans. During the early 1980s in the United States, as many as 150,000 people became infected with HIV each year. By the early 1990s, this rate had dropped to about 40,000 each year, where it remains today. AIDS cases began to fall dramatically in 1996, when new drugs became available. Today, more people than ever before are living with HIV/AIDS. The CDC (Centers for Disease Control and Prevention) estimates that about one million people in the United States are living with HIV or AIDS. About one quarter of these people do not know that they are infected.

Initially there are no symptoms for HIV, and often symptoms do not develop for many years. A person

infected with HIV may look and feel perfectly well for many years and may not know that they are infected. But as the person's immune system weakens, they become increasingly vulnerable to illnesses, many of which they would have fought off previously.

HIV is a fragile virus. It cannot live for very long outside the body. As a result, the virus is not transmitted through day-to-day activities such as shaking hands. You also cannot become infected from touching things like doorknobs. HIV is primarily found in the blood and sexual fluids of an infected person. HIV is transmitted through sexual contact when a sufficient quantity of these fluids enters someone else's bloodstream. In addition, an infected pregnant woman can pass HIV to her baby during pregnancy or delivery, as well as through breast-feeding. HIV can also be spread through contaminated blood and blood products and contaminated intravenous (IV) needles. HIV is diagnosed by a doctor through blood tests.

Today there are medical treatments that can slow down the rate at which HIV weakens the immune system and that can prevent or cure

some of the illnesses associated with advanced HIV disease. As with other diseases, early detection offers more options for treatment and preventive care. As time goes by, a person who has been infected with HIV is likely to become ill more and more often until, usually several years after infection, they become ill with one of a number of particularly severe illnesses. It is at this point that they are said to have AIDS – when they first become seriously ill, or when the number of immune system cells left in their body drops below a particular threshold. AIDS severely weakens the body's ability to fight infections and certain cancers. The immune system of a person with AIDS is threatened to the point that medical intervention may be necessary to prevent or treat serious illness. AIDS is an extremely serious condition, and at this stage the body has very little defense against any sort of infection. Without drug treatment, HIV infection usually progresses to AIDS in an average of ten years. Medication can prolong the time between HIV infection and

the onset of AIDS. A person with HIV can live for a long time before it becomes AIDS.

Sharing What We Know about Sexual Health

Student Resource 1: Jigsaw Article Packet

Teen Sexual Health

Group 7

HIV/AIDS

There are steps to lower the chances of getting HIV. A person making the decision to be sexually active should limit the number of sexual partners and choose a partner who has had no or few sex partners. Although

condoms significantly reduce the risk of infection, they are not a guarantee. Other things that will lower the risk of getting HIV are to not take intravenous drugs and never share drug needles or personal care items that might have blood on them (razors, toothbrushes).

Consider the risks if you are thinking about getting a tattoo or body piercing. The tools could have someone else's blood on them or the tattoo artist or body piercer may not follow good health practices. The surest way to prevent HIV and AIDS is to not have sex.

WEB RESOURCES

additional research for your project...

<http://www.sexedlibrary.org/stds.html#humanimmunodeficiency>

http://www.ashastd.org/learn/learn_hiv_aids_overview.cfm

<http://www.cdc.gov/hiv/topics/basic/index.htm#hiv>

<http://www3.niaid.nih.gov/research/topics/HIV/default.htm>

<http://www.avert.org/aids-epidemic.htm>

<http://www.teenwire.com/topics/infections-and-diseases.php>

Sharing What We Know about Sexual Health

Student Resource 2: My Sexual Health Journal

my
Sexual Health
journal

Name:

Sharing What We Know about Sexual Health

Student Resource 2: My Sexual Health Journal

K·W·L

Directions: Complete the “Then” column before the activity. Complete the “Now” column after the activity.

Then... Now...

K	This is what I KNOW about sexually transmitted infections	This is what I KNOW now about sexually transmitted infections
	W	This is what I STILL WANT TO KNOW about sexually transmitted infections
	L	This is how I will LEARN the answers to the questions I still have about sexually transmitted infections

Sharing What We Know about Sexual Health

Student Resource 2: My Sexual Health Journal

Directions: Use this page to record notes when you are listening to the teller from group 1.



NOTES...

This is what I want to remember about HPV:

Sharing What We Know about Sexual Health

Student Resource 2: My Sexual Health Journal

Directions: Use this page to record notes when you are listening to the teller from group 2.



NOTES...

This is what I want to remember about chlamydia:

Sharing What We Know about Sexual Health

Student Resource 2: My Sexual Health Journal

Directions: Use this page to record notes when you are listening to the teller from group 3.



NOTES...

This is what I want to remember about gonorrhea:

Sharing What We Know about Sexual Health

Student Resource 2: My Sexual Health Journal

Directions: Use this page to record notes when you are listening to the teller from group 4.



NOTES...

This is what I want to remember about hepatitis B:

Sharing What We Know about Sexual Health

Student Resource 2: My Sexual Health Journal

Directions: Use this page to record notes when you are listening to the teller from group 5.



NOTES...

This is what I want to remember about genital herpes:

Sharing What We Know about Sexual Health

Student Resource 2: My Sexual Health Journal

Directions: Use this page to record notes when you are listening to the teller from the group 6.



NOTES...

This is what I want to remember about syphilis:

Sharing What We Know about Sexual Health

Student Resource 2: My Sexual Health Journal

Directions: Use this page to record notes when you are listening to the teller from the group 7.



NOTES...

This is what I want to remember about HIV/AIDS:

Sharing What We Know about Sexual Health

Student Resource 2: My Sexual Health Journal

Give One - Take One

Sharing What We Know about Sexual Health

Teacher Resource 1: Content Background and Resources

“The primary goal of sexuality education is the promotion of adult sexual health. It assists children in understanding a positive view of sexuality, provides them with information and skills about taking care of their sexual health, and helps them acquire skills to make decisions now and in the future.”

*Statement from the Guidelines for Comprehensive Sexuality Education
From the National Guidelines Task Force*

“Each year, there are approximately 19 million new STD infections in the United States, and almost half of them are among youth aged 15 to 24. Thirty-four percent of young women become pregnant at least once before they reach the age of 20. These behaviors usually are established during childhood, persist into adulthood, are inter-related, and are preventable. In addition to causing serious health problems, these behaviors also contribute to the educational and social problems that confront the nation, including failure to complete high school, unemployment, and crime.”

*Statement from the National Center for Chronic Disease Prevention and Health Promotion
Division of Adolescent and School Health*

“Research indicates one out of every two teenagers will leave high school having been engaged in sexual activity. Research also shows increased numbers of teenagers who are contracting sexually transmitted diseases and HIV.”

*Statement from American Pediatric Association and the
Centers for Disease Control and Prevention*

Important Facts About Teen Sexual Health

- Sexually transmitted infections (STIs) affect men and women of all backgrounds and economic levels. They are most common among teenagers and young adults. Nearly half of all STIs occur in young people 15 to 24 years old. A recent study by the CDC released in March of 2008 estimates that one in four, 26 percent, of young women between the ages of 14 and 19 in the United States – or 3.2 million teenage girls – are infected with at least one of the most common sexually transmitted diseases (human papillomavirus (HPV), chlamydia, herpes simplex virus, and trichomoniasis). Many STIs have no symptoms.

Sharing What We Know about Sexual Health

Teacher Resource 1: Content Background and Resources

- Even when no symptoms appear, an infected person may be able to pass the infection along to others. That is why many healthcare providers recommend periodic testing or screening.
- STIs can have serious consequences. Health problems caused by STIs tend to be more severe and more frequent for women than for men. They can lead to pelvic inflammatory disease (PID), fertility issues, genital warts, and/or cervical cancer.
- Many experts believe that having an STI increases the risk of becoming infected with HIV.
- If diagnosed and treated early, many STIs can be treated effectively.
- There are several steps that can be taken to prevent STIs.
- Education and effective communication can also assist in the process of preventing STIs in young people. The surest way to prevent all STIs remains abstinence. It is valuable for young adults to learn more about sexual health regardless of their choices. Teens need to be able to understand these issues in order to make good choices themselves and to help their peers make good choices as well. It is important to ensure that students have the necessary tools and knowledge to make healthy choices.

Key Points from the Department of Health and Human Services, Centers for Disease Control and Prevention

- The surest way to prevent any STI is not to have sex or to have sex only with someone who's not infected and who has sex only with you.
- Condoms can reduce your risk of getting an STI if used the right way every single time you have sex.
- Washing the genitals, urinating, or douching after sex will not prevent any STI.
- Touching doorknobs, toilet seats, sharing drinking cups, etc. does NOT spread STIs.
- STIs are NOT spread by coughing or sneezing.

Defining Sexually Transmitted Infections with Students

- Sexually transmitted infections (STIs) are infections that are transmitted through genital contact during sexual activity with another person who is contagious.
- STI means the same thing as the term venereal disease (VD), which is no longer used because it does not accurately explain the infections that can be passed through sexual activity.
- STI means the same thing as the term sexually transmitted disease (STD). STI is more accurate and more commonly used because of the word infection instead of disease. Many infections don't cause diseases or symptoms.

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Teacher Resource 1: Content Background and Resources

- The term reproductive tract infection (RTI) is also sometimes used because not all the infections in the genitals are transmitted sexually. But this leaves out infections in the oral and anal areas

Discussing the Relevance of this Material with Students

- Some STIs are more common than the common cold.
- Some STIs are mostly uncomfortable and embarrassing, while others are deadly serious.
- Teenagers are one of the highest risk groups for STIs.
- There are ways to prevent or reduce the risk of every STI.
- Almost every STI is treatable and/or curable.
- This lesson will be a review for some students, or some may feel they do not need it. It is still relevant for everyone because our knowledge and need for knowledge about sexual health is always changing. Even if students feel that they do not need this information for themselves, they can utilize it to help their friends and families.

Sharing What We Know about Sexual Health

Teacher Resource 1: Content Background and Resources

WEB RESOURCES

Content Background

http://www.guttmacher.org/pubs/fb_sexEd2006.html

<http://www.siecus.org/>

<http://www.washingtonpost.com/wpdyn/content/story/2008/03/13/ST2008031302113.html>

Instructional Strategy Resources

<http://www.readingquest.org/strat/kwl.html>

Lesson Plans and Resources on Internet Safety

<http://bnetsavvy.org>

www.netsmartz.org/educators.htm

www.media-awareness.ca/english/games/index.cfm

<http://ilearn.isafe.org/>

www.cybersmartcurriculum.org/home

Group Work Rubric

http://www.uen.org/Rubric/rubric.cgi?rubric_id=12916

Create your own Rubric

<http://rubistar.4teachers.org/index.php>

Resources for Bookmarking Websites for Students on the Internet

(How to create “bookmarks” of websites for the students to go to for Internet research)

<http://iKeepBookmarks.com>

<http://pagekeeper.teachingmatters.org/home>

<http://teachingtoday.glencoe.com/howtoarticles/social-bookmarking>

Suggested Websites to Bookmark for this Activity

http://www.neahin.org/HPV/Cervical_Cancer/Images/NEA%20Cervical%20Cancer%20Brochure.pdf

<http://www.cdc.gov/std/HPV/STDFact-HPV.htm>

<http://www.sexedlibrary.org/stds.html#humanpapilloma>

http://www.ashastd.org/hpv/hpv_overview.cfm

http://www.ashastd.org/learn/learn_hpv_warts.cfm

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<http://www.teenwire.com/topics/infections-and-diseases.php>

<http://www.fda.gov/womens/getthefacts/hpv.html>

http://www3.niaid.nih.gov/healthscience/healthtopics/human_papillomavirus/index.htm

http://www.cancer.org/docroot/CRI/CRI_2_1x.asp?rnav=criov&dt=8

<http://www.cdc.gov/std/Chlamydia/STDFact-Chlamydia.htm>

<http://www.sexedlibrary.org/stds.html#chlamydia>

http://www.ashastd.org/learn/learn_chlamydia_facts.cfm

<http://www3.niaid.nih.gov/healthscience/healthtopics/chlamydia/index.htm>

<http://www.cdc.gov/std/chlamydia/the-facts/default.htm>

<http://www.teenwire.com/topics/infections-and-diseases.php>

<http://www.cdc.gov/std/Gonorrhea/STDFact-gonorrhea.htm>

<http://www.sexedlibrary.org/stds.html#gonorrhea>

http://www.ashastd.org/learn/learn_gonorrhea_fact.cfm

<http://www3.niaid.nih.gov/healthscience/healthtopics/gonorrhea/index.htm>

<http://www.cdc.gov/std/Gonorrhea/the-facts/default.htm>

<http://www.teenwire.com/topics/infections-and-diseases.php>

<http://www.cdc.gov/NCIDOD/diseases/hepatitis/b/index.htm>

http://www.ashastd.org/learn/learn_hepatitis.cfm

<http://www3.niaid.nih.gov/research/topics/hepatitis/>

http://kidshealth.org/teen/infections/stds/std_hepatitis.html

<http://www.teenwire.com/topics/infections-and-diseases.php>

<http://www.cdc.gov/std/Herpes/default.htm>

<http://www.cdc.gov/std/Herpes/the-facts/default.htm>

<http://www.cdc.gov/std/Herpes/STDFact-Herpes.htm>

<http://www.sexedlibrary.org/stds.html#herpes>

http://www.ashastd.org/herpes/herpes_overview.cfm

http://kidshealth.org/teen/infections/stds/std_herpes.html

<http://www.teenwire.com/topics/infections-and-diseases.php>

<http://www.cdc.gov/std/syphilis/default.htm>

<http://www.cdc.gov/std/Syphilis/STDFact-Syphilis.htm>

<http://www.sexedlibrary.org/stds.html#syphilis>

http://www.ashastd.org/learn/learn_syphilis_facts.cfm

<http://www3.niaid.nih.gov/healthscience/healthtopics/syphilis/default.htm>

http://kidshealth.org/teen/infections/stds/std_syphilis.html

<http://www.teenwire.com/topics/infections-and-diseases.php>

<http://www.sexedlibrary.org/stds.html#humanimmunodeficiency>

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Teacher Resource 1: Content Background and Resources

http://www.ashastd.org/learn/learn_hiv_aids_overview.cfm

<http://www.cdc.gov/hiv/topics/basic/index.htm#hiv>

<http://www3.niaid.nih.gov/research/topics/HIV/default.htm>

<http://www.avert.org/aids-epidemic.htm>

<http://www.teenwire.com/topics/infections-and-diseases.php>

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Teacher Resource 2: Instructional Strategy Overview

KWL

A KWL is a three-column graphic organizer that helps organize students' thinking during a lesson.

K stands for Know - This is the prior knowledge activation question.

W stands for Will or Want or Wish - What do I think I will learn about this topic?/What do I want to know about this topic?

L stands for Learn or Learned - What have I learned about this topic?/How will I learn about this topic?

How Does It Work?

- On the chalkboard, on an overhead, on a handout, or on students' individual clean sheets, three columns should be drawn. Label Columns with K – W – L.
- Before the lesson begins, ask students to fill in the Know column with words, terms, or phrases from their background or prior knowledge.
- Ask the students to fill in the Want column with what they want to learn about the topic.
- After the lesson, ask students to fill in the Learn column with their new knowledge gained from lesson.

The KWL is a versatile strategy that can be modified to accommodate a wide variety of instructional needs for any content area. It can be used as a whole class or independent activity.

KWL secret: Use the KWL as a before and after activity, a double KWL. Students will reflect on what they know, want to know, and how they can learn it before the lesson is taught. After the lesson is taught they can reflect on what they now know, what they still want to know, and how they can learn the answers to their questions.

Jigsaw Strategy

Jigsaw is a cooperative learning strategy. Teachers arrange students in groups called home groups. Each home group member is assigned a different piece of expert information related to the main topic. Home group members join with members of other groups assigned the same piece of expert information. Students become experts on the topic by reading and/or researching. After reading/researching the given topic, the expert group members share ideas about the information and develop a teaching plan for the topic. Expert group

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Teacher Resource 2: Instructional Strategy Overview

members return to their original home groups to teach each other about their topics. This strategy enables students to be responsible for learning and creates a deep understanding of the content. It also develops teamwork and cooperative learning skills. The Jigsaw Strategy can be modified to accommodate a wide variety of instructional needs for any content area.

Jigsaw secret: Modify the Jigsaw. Instead of the Expert group returning to the Home group to teach them about their part, have the Expert groups develop presentations to give to the whole class.

Tellers and Travelers

Tellers and Travelers is a cooperative learning strategy used to share a product created through teamwork. Most members of the team (Travelers) rotate to the table of the next team while one student (Teller) stays back to explain the product to the visiting team. The traveling students continue to rotate until they have visited all teams. After the students return, they share the information they learned from the other teams' work products with the team member who stayed back. This strategy is sometimes called Teams Tour or Three Stray, One Stay. This strategy is great for team building and concept development. This strategy can be used for any content area and can be adapted for most grade levels.

Tellers and Travelers secret: use a timesaving signal to indicate when it is time for the groups to move to the next team.

Give One – Take One

Give One – Take One is an instructional strategy used to allow students to share what they know or what they have learned. Students are provided with or can create a recording sheet with a grid. The teacher will tell the students to write a fact they have learned about a topic in a designated number of boxes on the grid. Then the students will pair with other students and exchange "facts" with each other. The students record their classmates' ideas in the boxes on the chart beneath their own. This process is repeated until the grid is complete. This strategy is very effective for promoting the sharing of ideas in the classroom.

Give One – Take One secret: use this strategy as a team building activity at the beginning of the school year.

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Teacher Resource 3: Lesson Vocabulary

antibiotic

Definition: A substance that fights bacteria

Context: Antibiotics, like Tetracycline or Erythromycin, can cure chlamydia.

bacteria

Definition: Tiny one-celled organisms present throughout the environment that require a microscope to be seen

Context: While not all bacteria are harmful, some cause disease. Examples of bacterial disease include diphtheria, pertussis, tetanus, Haemophilus influenza and pneumococcus (pneumonia).

bacterium

Definition: The singular version of the word bacteria

Context: Syphilis is a sexually transmitted infection caused by the bacterium Treponema pallidum.

carrier

Definition: A person or animal that harbors a specific infectious agent without visible symptoms of the disease. A carrier acts as a potential source of infection.

Context: There are an estimated 1-1.4 million carriers of hepatitis B in the U.S.

cirrhosis

Definition: Irreversible scarring of the liver due to ongoing damage which may affect liver function. Cirrhosis can lead to liver failure and even death.

Context: HBV can result in serious illness, such as cirrhosis of the liver.

contact

Definition: Exposure to a source of an infection, or a person so exposed

Context: If symptoms of gonorrhea develop, they usually appear within two to 10 days after genital contact with an infected partner.

cure

Definition: A means of healing or restoring to health

Context: The bad news is that there is no cure for genital herpes.

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Teacher Resource 3: Lesson Vocabulary

disease

Definition: A condition of the living animal or plant body or of one of its parts that impairs normal functioning and is typically manifested by distinguishing signs and symptoms

Context: Some diseases can be prevented with vaccines.

diagnose

Definition: To recognize (as a disease) by signs and symptoms

Context: Syphilis is diagnosed by a doctor through blood tests.

ectoparasite

Definition: A parasite that lives on the exterior of its host

Context: A parasite, such as a flea, lives on the exterior of another organism.

epidemic

Definition: The occurrence of more cases of disease than expected in a given area or among a specific group of people over a particular period of time

Context: The epidemic has now spread to every part of the United States.

exposure

Definition: Coming in direct contact with an agent that might cause a disease or infectious process

Context: Mixing sex with alcohol or other drugs increases the chances of unintended pregnancy and exposure to sexually transmitted infections.

fungus

Definition: Any of a diverse group of eukaryotic single-celled or multinucleate organisms that live by decomposing and absorbing the organic material in which they grow

Context: Ringworm is a disease caused by a fungus.

immunity

Definition: Protection against a disease. There are two types of immunity, passive and active. Immunity is indicated by the presence of antibodies in the blood and can usually be determined with a laboratory test.

Context: Without evidence of immunity, it is beneficial to give the vaccine within three to five days of exposure.

Sharing What We Know about Sexual Health

Teacher Resource 3: Lesson Vocabulary

infection

Definition: The state produced by the establishment of an infective agent in or on a suitable host

Context: Pelvic inflammatory disease can result from a sexually transmitted infection.

intravenous

Definition: Situated, performed, or occurring within or entering by way of a vein

Context: Both men and women have acquired HIV through sex with an intravenous drug user.

lesion

Definition: Any localized, defined area of diseased tissue, as a spot, canker, blister, or scab

Context: Approximately 10,000 women each year in the U.S. will develop cervical cancer, and about 500,000 women will experience serious cervical lesions that may need treatment.

liver

Definition: A large reddish-brown human organ located in the upper right portion of the abdominal cavity, it performs several vital functions, which are necessary for survival.

Context: Hepatitis is a virus that causes inflammation of the liver.

organism

Definition: A form of life. A complex structure of interdependent and subordinate elements whose relations and properties are largely determined by their function in the whole

Context: The organism has both an inner (cytoplasmic) and outer membrane, separated by a cell wall.

prevent

Definition: To keep from occurring; avert; or hinder

Context: Abstinence is the only 100 percent effective way to prevent unplanned pregnancy and sexually transmitted infections.

protozoan

Definition: Any of a large group of single-celled, usually microscopic, eukaryotic organisms

Context: Amoebas, ciliates, flagellates, and sporozoans are protozoans.

Sharing What We Know about Sexual Health

Teacher Resource 3: Lesson Vocabulary

risk

Definition: The probability that an event will occur

Context: Using condoms can lower the risk of getting a sexually transmitted infection.

syndrome

Definition: A group of symptoms that together are characteristic of a specific disorder or disease

Context: Chronic fatigue syndrome shares symptoms with many other disorders.

symptom

Definition: A sign or an indication of disorder or disease, especially when experienced by an individual as a change from normal function, sensation, or appearance

Context: Genital herpes is one of those tricky infections that often have no symptoms.

vaccine

Definition: A substance that protects a body against a disease by causing the body's immune system to produce antibodies

Context: Some vaccines provide lifelong protection against infection, while others require several doses given at regular intervals.

universal precautions

Definition: Recommendations issued by the CDC to minimize the risk of transmission of blood borne pathogens, particularly HIV and HBV

Context: Universal precautions are intended to prevent skin exposures of health-care workers to blood borne pathogens.

virus

Definition: An infectious agent that multiplies within cells and causes disease such as chickenpox, measles, mumps, rubella, pertussis and hepatitis. Antibiotics, the drugs used to kill bacteria, do not affect viruses.

Context: Viruses are a major cause of disease and can infect human beings with measles, influenza, and the common cold.

Sharing What We Know about Sexual Health

Teacher Resource 4:

Activating Prior Knowledge/Leading a Class Discussion

Step 1: Identify the Topic

Make sure students understand what sexually transmitted infections (STIs) are before beginning the brainstorming activity. Sexually transmitted infections (STIs) are infections that are transmitted through genital contact during sexual activity with another person who is infected. Most STIs are curable, but some are not. If you have sex with someone who has an STI, you can get it too. Many people who have an STI don't know it because many STIs have no symptoms. The surest way to prevent STIs is not to have sex.

Step 2: Ask the Question

Can the students name any sexually transmitted infections (STIs)? Ask students to name infections that they believe to be sexually transmitted.

Step 3: Record Answers

Create a list on the board of all of the infections students provide.

Step 4: Clarify the List

Review the list that the students have provided. Indicate to the students which infections are classified as STIs and which are not and why. There are many resources which provide information about STIs some of which may classify some of these infections differently. Explain that for the purpose of this lesson we will rely on the classifications of credible organizations such as the CDC. Infections such as colds can technically be transmitted through sexual contact but it is more likely that these common infections are transmitted through things like coughing and sneezing first, so they are not considered STIs. Mark the infections that are STIs (using Teacher Resource 5). Move the infections that are not STIs to a separate list on the board entitled "Not Considered STIs".

Step 5: Add to the list

Using Teacher Resource 3, add any additional STIs to the list that the students did not name. The final product on the board should be a written list of all of the STIs on the List of Sexually Transmitted Infections - Teacher Resource 5.

Step 6: Discuss the following points/questions regarding STIs

Supplement the students' responses (using Teacher Resource 5) to ensure that the correct information is provided. Ask the students if they know which of the STIs listed is caused by a virus and which is caused by a bacterium. Explain the difference to the students. A **bacterium** is a tiny one-celled organisms present throughout the environment that require a microscope to be seen. Not all bacteria are harmful, but some cause disease. Diseases caused by bacteria can be cured with drugs called antibiotics. A **virus** is a tiny organism that multiplies within cells and causes diseases. Antibiotics, do not affect viruses. Discuss and identify STIs which can be transmitted ONLY through sexual contact and those which can SOMETIMES be transmitted through sexual contact.

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Teacher Resource 5: List of Sexually Transmitted Infections (STIs)

Sexually Transmitted Infections			
	Overview	Type of Organism	Transmission Method (ONLY sexual contact or SOMETIMES sexual contact)
Bacterial Vaginosis (BV)	BV is the name of a condition in women where the normal balance of bacteria in the vagina is disrupted and replaced by an overgrowth of certain bacteria.	Bacterium	Sometimes
Chlamydia	A bacterial infection that can scar the fallopian tubes affecting a woman's ability to have children.	Bacterium	Only
Genital Herpes	Genital herpes is a recurrent skin condition that can cause skin irritations in the genital region (anus, vagina, penis).	Virus	Only
Gonorrhea	A bacterial infection of the penis, vagina or anus. Also known as "the clap".	Bacterium	Only
Hepatitis A and B	A disease that affects the liver. There are more than four types. "A" and "B" are the most common.	Virus	Only
HIV Disease and AIDS	Human immunodeficiency virus or HIV is a virus that attacks the immune system resulting in Acquired Immunodeficiency Syndrome, or AIDS.	Virus	Only
Human Papillomavirus (HPV) and Genital Warts	HPV is a virus that affects the skin in the genital area, as well as a female's cervix. HPV usually clears the body on its own, without causing visible symptoms. Some types of persistent HPV infection can cause warts, abnormal cell changes, or cancer.	Virus	Only
Nongonococcal Urethritis (NGU)	NGU is a treatable bacterial infection of the urethra (the tube within the penis) often times associated with chlamydia.	Bacterium	Sometimes
Pelvic Inflammatory Disease (PID)	PID is a general term that refers to infection of the uterus (womb), fallopian tubes (tubes that carry eggs from the ovaries to the uterus) and other reproductive organs. It is a common and serious complication of some sexually transmitted infections.	Bacterium	Only
Pthiriasis (Pubic Lice or Crabs)	Also known as pediculosis pubis, crabs are parasites or bugs that live on the pubic hair in the genital area.	Insect	Sometimes
Syphilis	A treatable bacterial infection that can spread throughout the body and affect the heart, brain, nerves.	Bacterium	Only
Trichomoniasis	Trichomoniasis is a common sexually transmitted infection that affects both women and men.	Protozoan	Only
Urethritis	An infection of the urethra, the tube that urine goes through to leave the body. Urethritis is often caused by an STI.	Bacterium	Sometimes

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Teacher Resource 5: List of Sexually Transmitted Infections (STIs)

Commonly Confused

Non-Sexually Transmitted Infections

Infections the students may incorrectly name as STIs during the brainstorm

Cytomegalovirus (CMV)	CMV is a common virus that infects people of all ages. Once CMV is in a person's body, it stays there for life.
Epstein-Barr Virus (EBV) and Mononucleosis	Many children become infected with EBV, and these infections usually cause no symptoms or are indistinguishable from the other mild, brief illnesses of childhood. When infection with EBV occurs during adolescence or young adulthood, it causes infectious mononucleosis.
Giardiasis	Giardiasis is a parasitic disease caused by a microscopic parasite. The parasite is found on surfaces or in soil, food, or water that has been contaminated with the feces from infected humans or animals. People can become infected after accidentally swallowing the parasite. Giardia causes diarrheal illness, and giardiasis is a common cause of waterborne disease in humans in the United States.
Group A Streptococcus (GAS)	Group A Streptococcus is a bacterium often found in the throat and on the skin. Most GAS infections are relatively mild illnesses such as "strep throat," or impetigo. These bacteria are spread through direct contact with mucus from the nose or throat of persons who are infected or through contact with infected wounds or sores on the skin.
Hepatitis C	Hepatitis C is a liver disease caused by the hepatitis C virus (HCV). HCV infection sometimes results in an acute illness, but most often becomes a chronic condition that can lead to cirrhosis of the liver and liver cancer. It spreads through contact with the blood of an infected person, primarily through sharing contaminated needles to inject drugs.
Human Parainfluenza Viruses (HPIVs) or Common Cold	HPIVs can also cause serious lower respiratory tract disease with repeat infection (e.g., pneumonia, bronchitis, and bronchiolitis).
Influenza (Flu)	Influenza is a contagious respiratory illness caused by influenza viruses.
Pediculosis (Head Lice)	Head lice infest the head and neck and attach their eggs to the base of the hair shaft. Lice move by crawling; they cannot hop or fly. Head lice infestations are spread most commonly by close person-to-person contact.
Scabies	Scabies is an infestation of the skin with the microscopic mite <i>Sarcoptes scabiei</i> . Scabies spreads rapidly under crowded conditions and frequent skin-to-skin contact between people, such as in hospitals, institutions, child-care facilities, and nursing homes.
Tinea Cruris (Jock Itch) Tinea Pedit (Athlete's Foot)	Dermatophytes are types of fungi that cause common skin, hair and nail infections. One example of a very common dermatophyte infection is athlete's foot, which is also called tinea pedis. Another common dermatophyte infection affecting the groin area is jock itch, also known as tinea cruris.
Candidiasis (Yeast Infection)	Candidiasis is a fungal infection that occurs when there is overgrowth of fungus called <i>Candida</i> . <i>Candida</i> is normally found on skin or mucous membranes.

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Teacher Resource 6: Group Work Evaluation Rubric

Directions: Explain the rubric to the class before the activity begins. First, have students complete a self-evaluation using the first Group Work Rubric on the sheet. Second, give the rubric to a group member to complete the second rubric. Finally, based on anecdotal observations, the teacher completes the third rubric on the page.

STUDENT NAME _____

SELF EVALUATION

STI Jigsaw Activity	Point Total _____/20				Total
	1	2	3	4	
Prepared for the small group meeting ...	never	rarely	often	always	
Interacted, discussed, and posed questions ...	never	rarely	often	always	
Contributed to the small group research effort...	never	rarely	often	always	
Listened to others, offered ideas and shared information ...	never	rarely	often	always	
Encouraged and supported teammates ...	never	rarely	often	always	

PEER EVALUATION

STI Jigsaw Activity	Point Total _____/20				Total
	1	2	3	4	
Prepared for the small group meeting ...	never	rarely	often	always	
Interacted, discussed, and posed questions ...	never	rarely	often	always	
Contributed to the small group research effort...	never	rarely	often	always	
Listened to others, offered ideas and shared information ...	never	rarely	often	always	
Encouraged and supported teammates ...	never	rarely	often	always	

TEACHER EVALUATION

STI Jigsaw Activity	Point Total _____/20				Total
	1	2	3	4	
Prepared for the small group meeting ...	never	rarely	often	always	
Interacted, discussed, and posed questions ...	never	rarely	often	always	
Contributed to the small group research effort...	never	rarely	often	always	
Listened to others, offered ideas and shared information ...	never	rarely	often	always	
Encouraged and supported teammates ...	never	rarely	often	always	

Evaluation Point Total _____/60

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Teacher Resource 7: Reference List

American Cancer Society <<http://www.cancer.org/docroot/home/index.asp>>

Immunization Action Coalition <<http://www.vaccineinformation.org/>>

Kagan, Spencer. (1992). *Cooperative Learning*. Resources for Teachers.

Kids Health Organization <<http://kidshealth.org>>

Murray, Bonnie P. (2002). *The New Teacher's Complete Sourcebook: Grades K-4*. Scholastic Books.

National Education Association Health Information Network <<http://www.neahin.org>>

Sexuality Information and Education Council of the United States <<http://www.siecus.org/index.cfm>>

U.S. Centers for Disease Control and Prevention <<http://www.cdc.gov/>>

U.S. Department of Health and Human Services <<http://www.hhs.gov/diseases/>>

Wong, Harry K. (1998). *The First Days of School: How to Be an Effective Teacher*. Harry K. Wong Publications Inc.

World Health Organization <www.who.org/>