

Science & Technology 1: STI Transmission Demonstration

Aim/Rationale

Students will understand the ability of a chemical indicator to detect the presence of an unknown substance in a mixture. Students will understand the process of STI transmission and use the scientific language associated with the concepts.

Competencies

- 1) *Seeks answers or solutions to scientific or technological problems.*
- 2) *Makes the most of their knowledge of science and technology.*
- 3) *Communicates in the languages used in science and technology.*

Materials

- Water
- 1 teaspoon Sodium Hydroxide (NaOH) in small container
- Phenyl Red Indicator solution or phenol-phthaline reactant
- Small plastic cups or test tubes (one for each student)
- Pipettes (one for each student)
- 1 eye dropper

Before class

- Put a volume of water equal to 3 test tubes into the small container with the dry NaOH, then transfer the solution into 3 test tubes.
- Fill the remaining class set of test tubes with water.
- Place all of the test tubes (including the ones with NaOH solution) on desks in test-tube holders.

Development/Teaching Methods

1. Have students mingle about the classroom and exchange solution with one another every time they talk to someone new. Students should be keeping track of the people they exchange solution with.
2. Students return to their seats and all of the students get “tested” by the teacher, (10-15 min)
 - Put a few drops of **indicator** into each beaker. Students whose beakers contain NaOH will notice a colour change, indicating that they have contracted something.
 - As a class, students should recognize patterns (are the affected students isolated in a corner of the room?) and try to figure out by comparing lists which three students started with the NaOH solution. (This is how an epidemiologist might study the spread of disease.) Recognize the students’ emotional reactions to this activity.

Culmination

1. **Discussion Questions (in small groups or as a class, 20 min)**
 - How does this activity relate to the spread of STIs?
 - Are all STIs spread by body fluids?
 - No. Some STIs are spread simply by contact.
 - Examples:
 - The herpes simplex virus (HSV) can be transmitted by direct contact with an open sore. The sore may be on the mouth or genitals, and the virus can live in both areas. HPV (human papilloma virus) or genital warts can be spread by skin-skin contact
 - Pubic lice (crabs)
 - Syphilis: by direct contact with a syphilis sore or rash
 - **How can you prevent the spread of STIs?**
 - Barrier devices: (this would be an ideal time to do a condom demonstration)
 - Condoms: Worn on the penis or sex toys. Prevents spread of fluids, but may not cover the base of the penis, therefore there is potential for spread of certain STIs through contact.

Steps in putting on a condom:

1. Check the expiry date and the condition of the package
2. Pinch the tip of the condom, ensuring that it is the right orientation: “like a sombrero, not like a toque” (pinching the tip decreases risk of breakage and allows room for ejaculate)
3. Roll condom down the penis/toy etc. to the base
4. After ejaculation, hold the condom at the base while pulling out of the orifice.
5. Remove condom while penis is still erect
6. Dispose of safely (do not flush!)

Other barriers:

- Internal (female) condoms: worn inside the vagina or anus. Prevents spread of fluids, but may not cover the base of the penis or labia, therefore there is potential for spread of certain STIs through contact.
 - Dental dams: A thin sheet of latex that can be made out of a glove or cutting through an unrolled condom. Used as a barrier for oral sex on the vulva or anus.
 - Gloves: Used for fingering and touching. Can be made into a dental dam.
 - Did people with more partners seem to have a higher risk of contracting an “STI”?
 - May open up discussion about lifestyle choices (e.g. practicing safer sex, monogamous relationships, abstinence etc.)
 - What is the significance of refusing to participate? (**analogous to abstinence**)
 - Discuss lifestyle choices and how to minimize risk.
 - Abstinence is one method of minimizing risk. This may be mentioned, but the emphasis should be placed on risk reduction by practicing safer sex. Safer sex includes using protection, getting tested and communication between partners. Remind students that partners should be able to talk (before they engage in sexual activity) about what they are comfortable with, whether they have been tested or if they are aware of having an STI.
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