

Which STDs Did You Contract? *An Activity for Large Classes*

Laura M. Barden

Sexually transmitted diseases (STDs) are a common point of discussion on the evening news, television news magazines, and talk shows; in magazines and journals; and among adolescents and young adults. Though AIDS tends to receive the greatest amount of press, other STDs, including chlamydia, gonorrhea, syphilis, genital herpes, and genital warts are also cause for concern. They cause a variety of problems such as painful sores, sterility, psychological disturbances, muscle and bone degeneration, cancer, and even death. People are often reminded through various media that a person infected by HIV may have no external signs or any indications of the disease and yet may be capable of infecting others. However, they are less frequently reminded that most STDs can be transmitted even when signs or symptoms are not present, that many signs are internal or easily mistaken for other non-STD infections like the flu, and that sometimes neither external nor internal signs occur in an infected person. Therefore, a person may be unaware of whether he/she has a sexually transmitted disease; also he/she may not be able to determine a potential sexual partner's condition without being told.

Since college students are included in the group most likely to contract sexually transmitted diseases, I have developed an activity that simulates the spread of STDs through a population engaging in sexual intercourse without the use of latex condoms. Other activities have been developed to examine the spread of a single infectious disease, e.g. AIDS, through an unprotected population. However, these activities require use of a strong

base and exchange of liquids, and therefore, are effective for small groups of students but logistically difficult for large groups (Dickey 1989; Jones 1993). On the other hand, the activity described below is designed for use in large lecture classes typical of most colleges and universities, requires little time, and allows the instructor to select the number and types of STDs (or other infectious diseases) to be included. The activity also allows the instructor the opportunity to include such issues as unplanned pregnancies and birth control. Colored paper strips are used as an analogy for body fluids and various STDs. Each color represents either a specific STD or no STD (e.g. red might represent chlamydia and black might represent no STD). The paper itself represents body fluids. At the start of the activity, students are given one colored strip of paper, but are not told of its significance. During the activity, students exchange pieces of their colored strips. This exchange is analogous to the exchange of body fluids during sexual activity.

Sexually Transmitted Diseases

Chlamydia, gonorrhea and syphilis are caused by different types of bacteria—*Chlamydia trachomatis*, *Neisseria gonorrhoeae*, and *Treponema pallidum*, respectively. The symptoms for both chlamydia and gonorrhea include a vaginal or penile discharge and a burning sensation upon urination. However, the symptoms are often absent in women and are not always present in men. Even when symptoms do occur, they are easily misdiagnosed as a bladder infection, especially in women. In women, chlamydia and gonorrhea have both been linked to pelvic inflammatory disease (PID), a condition that causes inflammation of the oviducts

and uterus often resulting in sterility or enhanced chances of ectopic pregnancies. In men, these diseases can obstruct the vas deferens, causing sterility, and the urethra, causing difficulty in urination and sexual activity. In both males and females, gonorrhea can spread throughout the body causing symptoms such as arthritis and reducing life expectancy.

Syphilis is the most damaging of these three bacterial infections. One of the first signs of syphilis is the formation of painless chancres (pronounced shankers) on the genitals. In females, the chancres may only occur internally and, therefore, are often undetected. If left untreated, syphilis can affect the major organ systems possibly weakening the arteries, causing blindness or psychological disturbances, or causing bone or muscle tissue damage leading to crippling. Since all three of these diseases (chlamydia, gonorrhea and syphilis) are bacterial, generally they can be cured by the use of antibiotics but only if caught during early phases of the disease. However, due to the overuse of antibiotics, some strains of each of these bacteria have become antibiotic resistant.

Genital herpes, genital warts, and AIDS are caused by viruses—herpes simplex type II virus, the human papilloma viruses (HPVs), and the human immunodeficiency viruses (HIV-1 and HIV-2), respectively. Since these diseases are caused by viruses, no cures are available. Furthermore, no vaccines have yet been successfully developed to prevent their spread. Therefore, once a person becomes infected, only the symptoms can be treated.

The primary symptom of genital herpes is the formation of painful ulcers in the infected areas. However, initial symptoms may include flu-like symptoms, pain upon urination, and vaginal or penile discharge, all of which can be initially misdiagnosed. When ulcers

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eventually do occur (as they usually do), they can occur both internally and externally and can last up to three weeks. However, after the ulcers heal, the virus lies dormant in the body, usually near the central nervous system. Future symptomatic episodes result when the virus migrates back down the nerve to the site of infection. Stress, sexual intercourse, sunlight, even menstruation may trigger the virus to migrate. However, transmission of the virus between sexual partners can occur regardless of the presence of ulcers or other symptoms.

An individual infected with genital warts will frequently have no symptoms or will develop symptoms years after the initial infection. Symptoms include the development of warts or lesions near the site of infection. Warts can be removed through a variety of surgical and chemical means; however, they may reoccur. Whether a person develops warts or not, once infected he/she is a carrier and can infect others. Condoms can be effective in preventing warts on the penis or cervix from contacting a partner, however, external warts can still allow for transfer of the virus even when condoms are used. Genital warts are linked to a variety of cancers including cancer of the cervix, vulva, anus and penis.

AIDS, the most discussed and life-threatening of all STDs, occurs as a result of the destruction of T4 lymphocytes by the HIV virus. Destruction of the lymphocytes reduces the effectiveness of the infected person's immune system, making him/her susceptible to a variety of other diseases including pneumonia, encephalitis, Kaposi's sarcoma, and tuberculosis. Therefore, a variety of different symptoms have been associated with AIDS including infections that do not heal with normal treatment, unexplained weight loss, and formation of dark spots under the skin. As in the case of a person with genital warts, an HIV infected person may remain asymptomatic for years after initial infection but is still able to transmit the infection to others while asymptomatic. Though a variety of treatments have been developed to reduce the rate at which the HIV virus is able to reproduce in the body, no cures have been identified. Currently in North America, the most common HIV virus is type-1. Type-1 is less easily contracted through heterosexual activity and is less virulent than type-2. However, type-2 is common in other parts of the world and is beginning to make inroads in North America as well.

For additional information about

these and other sexually transmitted diseases, their signs and symptoms, see References.

Large Group Activity

Materials

For a class of approximately 150 students, you will need one strip of colored paper per student as follows: 5 each of green, red, white, orange, yellow, and blue to represent syphilis, chlamydia, gonorrhea, genital warts, genital herpes, and AIDS, respectively. The remaining 115 students should receive one strip of black paper to indicate they are not infected by an STD at the outset. I have found using 1" x 18" strips of construction paper works particularly well. Shorter paper strips tend to become excessively small and difficult to handle during the activity.

To add a bit of variation to the activity, you may also want to distribute a number of small, round, colored stickers to indicate other issues. For example, you may randomly distribute the following colored stickers: one black sticker to a female to represent death due to complications from using the Pill, IUD, or other contraceptive device; one red sticker to a female to represent an unplanned pregnancy while using Depo-Provera or the Pill; four yellow stickers to four different females to represent unplanned pregnancies while using a diaphragm, cervical cap, or IUD (note: the activity assumes no one is using condoms); five green stickers to five different males to represent their female partner was one of the five women to have an unplanned pregnancy; and one blue sticker to be given to a male to represent the death of his female partner due to complications resulting from the use of birth control. These stickers can be easily distributed while students are in the process of exchanging their paper strips.

Procedure

As students enter the room, hand each one a single strip of colored paper, making sure that all the STD colors are distributed. The students tend to be curious about the purpose of the paper, but try to avoid giving them any specific information concerning the purpose of the activity. Once class has started, give only the directions necessary for them to exchange their paper strips (as described below). This will keep their curiosity high and will not inhibit their partner choices during the exchanges.

During the activity, have students share their colored strips of paper with

four different classmates. For the first exchange, students should first select a partner, then tear their paper strip in half giving half their strip to their partner while receiving half of their partner's paper strip. For example, if Student A starts with a yellow paper strip and pairs with Student B who has a black paper strip, then after the exchange, each will end with both a strip of black paper and a strip of yellow paper (half the size of the original paper strips). This will simulate the exchange of body fluids during sexual intercourse. For the second, third and fourth exchanges, students should tear ALL paper strips in their possession in half—giving half of EACH strip to their partners and keeping the other half. In this way, the students will retain whichever STDs they have "contracted" during each "sexual" exchange while at the same time giving each partner all STDs they have previously "contracted" and "contracting" all STDs their current partner has.

I do not specify that exchanges must occur between members of the opposite sex. The reasons for not specifying gender include:

1. The fact that most STDs can be transmitted through anal and oral sex as well as genital sex.
2. The fact that some STDs can be transmitted through deep

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kissing, e.g. syphilis and genital herpes.

3. The activity seems to work best when the element of surprise is maintained.
4. Allowing free exchange reduces the complexity of the directions and the time needed for exchange.

After completing the activity, all students would theoretically end with 16 different strips of colored paper. However, since some students work more quickly than others and some want to move further from their seat, the partners may include one person who has had three previous partners and one who has had only one. Therefore, some students may end with more than 16 colored paper strips. The only negative consequence to this is that the paper strips can become quite small; this is a minor problem which the students tend to handle well. (Note: Be sure to provide sufficient wastepaper baskets for disposal of the used paper strips.) A benefit of this is that in reality one sexual partner may have had a greater number of previous partners than the other.

The one error to watch for is those students who, after the first exchange, simply give away one of their two colored strips in subsequent exchanges. This error can produce erroneous results, e.g. students who start with AIDS and end with no STD. It can also detract from the point of the activity. I have found that taking two or three minutes to demonstrate the procedure through two or three exchanges tends not only to reduce procedural questions once the activity has begun but also to eliminate this procedural error. A second means of avoiding this problem is having the students make the exchanges in unison, you directing them through each exchange. However, unison exchanges in a large lecture hall setting may restrict movement of students, therefore limiting the spread of some STDs. Also, this added teacher control may limit student spontaneity. At any rate, regardless of how you choose to have your students exchange their paper strips, in unison or randomly, you might consider including yourself in the activity, actually exchanging paper strips along with your students.

Finally, if you plan to distribute the stickers to add a bit of variation, do so while the students are exchanging their paper strips. Since the stickers represent gender specific issues, students who receive one should not exchange it. I have found students are very eager

to receive a sticker and generally are not likely to give it away.

The procedure can be further varied by altering the distribution pattern of the paper strips. You may randomly distribute all the colors, randomly distribute some but cluster one or two colors, or cluster each of the different colors. The resulting transmission patterns will change depending upon the initial distribution pattern. I have found clustering one or two colors but randomly distributing the rest is most effective during the post-activity discussion. Clustering one or two STDs allows for a discussion of how localized diseases may spread through the larger population as individuals from one region interact with those in surrounding areas, and as those from one region migrate to regions farther away. Randomly distributing the others allows for a discussion of how diseases found throughout a population, not localized, tend to spread through the entire population.

Post-Activity Discussion

After students have finished exchanging their paper strips and have returned to their seats, reveal the legend showing the relationships between the colors of the paper and the different STDs. Be prepared for much commotion as students figure out which STDs they and their neighbors have "contracted." After the students have had time to express their astonishment (and they will), then focus on how the STDs spread. I have found focusing on one STD at a time most helpful, e.g. asking those who started with a green strip to raise their hands followed by those who ended with a piece of green strip. Students are quite surprised at how quickly five infected individuals can result in 100, 120, or more infected individuals—especially when each person only had four partners. You might also consider having the students indicate the number of STDs they contracted through the activity. Students will be amazed at the number of individuals who contracted two, three, even all six STDs. In either case, you might want to quantify the results by recording them in a chart on the overhead for further discussion purposes.

If you choose to include the stickers to vary the activity, reveal the legend for the colored stickers only after students have had a moment to react to the STD legend. Students tend to be very curious about what the colored stickers mean, especially after they find out what the different paper colors meant. As with the colored paper

strips, have students who received the different colored dots raise their hands; this tends to personalize for many of them that birth control is neither risk free nor 100% effective. By including the stickers to designate fathers, I have found the males in the class tend to stay more involved. Though the females who received the stickers express concern, the male students' level of concern at being identified as fathers (or more generally at labeling any one specific male as a father) seems to be greater. The males' conversations tend to focus on actually being identified and the consequences they might face if this were reality. The novelty of this part of the activity seems to be greater for the males and seems to have a greater impact on them.

Time Needed

The entire activity, including post-activity discussion, takes between 40 and 45 minutes depending upon the size of the class and the number of questions students pose. If you choose to vary the activity by adding such things as unplanned pregnancies, then the amount of discussion time needed will increase. The time needed for students to exchange their paper strips (and to distribute the stickers) is approximately 15 minutes for a class of 175 students in a lecture hall that seats approximately 215. The less crowded the room, the more free the aisle ways, the less time students will need to exchange their paper strips.

Conclusion

As with any analogy, this one has drawbacks. One drawback, which is similar to that of other infectious disease activities, is that exposure to a given STD results in infection 100% of the time. This is not in fact true. However, given the problems associated with sexually transmitted diseases and the fact that some STDs are more easily transmitted than others, this drawback is not a serious one. The point of the activity is to help students understand that STDs can be transmitted through an unprotected population quickly and relatively unnoticed. The second and more serious drawback is that, unlike most STDs, the colored strips are always visibly identifiable; most STDs can be transmitted even when the infected person is unaware of his/her condition and when no signs or symptoms have occurred. I have found that many of my students initially do not realize that they can get a sexually transmitted disease, including AIDS,

from a partner who looks well, shows no external marks, sores, etc., and has had no symptoms. They also do not realize that a person can have and infect others with an STD and not know that he/she was even exposed to one, much less had contracted one him/herself. Using a common material, colored construction paper, to represent body fluids and not informing students ahead of time of the relationship between the colors and different STDs tends to help most students realize that symptoms, external signs, or even knowledge of exposure are not required for transmission of disease. Nonetheless, this issue should be explicitly included in any discussion of this activity.

Overall, this activity seems to have a considerable impact on the students who participate. I have observed a large percentage of the students in a large lecture class still discussing the results of this activity two to three weeks afterwards. One point often included in students discussions is that though only five students (less than 4% of the class) started with a given STD, between 75% and 85% of the class ended with it; and though less than

25% of the class started with any STD, approximately 99% ended with at least one. This amazes them! But the activity hits many of them more personally as well. Most of the students "contracted" multiple STDs during the activity, and this bothers them. They were blindly doing as they were told, then found out the consequences of their behavior. Several students later talked about how similar this was to their reality as young adults. This seriously disturbs them and causes them to think!

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For Further Information About Sexually Transmitted Diseases

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- The most recent issue of *Morbidity and Mortality Weekly Report*. This report is available through the Center for Disease Control, Department of Health and Human Services, and includes data concerning the number of reported cases of each type of STD.
- Most introductory biology textbooks for use at the college level now include a section on sexually transmitted diseases. They generally include information about transmission, symptoms and treatments.



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