

A Hands-On Simulation of Disease Transmission

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In this laboratory exercise students exchange fluids from test tubes to simulate transmission of disease-causing organisms. Each student has a test tube of dilute (0.001N) HCl, except for one student who is given 0.1N NaOH instead. Since all the solutions are colorless, there is no indication that one is different from the rest. Students pair up and use a disposable pipet to exchange fluids. After three rounds of such contacts with different partners each person tests his own solution with phenol red. All solutions are acidic (yellow) except the original “carrier” of NaOH and any that have come into contact with an NaOH-“infected” solution, which are basic (pink). The transmission route is then traced, and students discuss various aspects of epidemiology and self-protection against disease. A more complete discussion of the exercise can be found in the reference below.

Prep Note

To make 1 liter of phenol red stock solution, dissolve 0.4 g phenol red in 10 ml 0.1N NaOH. Dilute up to 1000 ml with tap water. For this exercise, dilute the stock solution 1:10 with tap water. Use tap water for all the solutions since distilled water is somewhat acidic.

Dickey, Jean L. 1989. A quick and easy simulation of disease transmission. *American Biology Teacher* 51: 364–5.