

FEATURED PROJECT: DISEASE OUTBREAK SIMULATION (EPIVILLE)

The Disease Outbreak Simulation is part of the Mailman School of Public Health's newly redesigned epidemiology course. The stated purpose of the redesign was to captivate its 250 students from day one, using tools like this multimedia environment teaching basic disease-control principles. Course directors Dan Herman and Lydia Zablotska has each student play the role of an epidemiologist, gathering facts and deciding actions to curb an outbreak that has struck the fictitious town of EpiVille. The simulation uses video newscasts and interviews to provide details on the developing epidemiologic emergency. The Chamber of Commerce site provides general information about the town, its industries and commerce, and the EpiVille Department of Health.

Students use the simulation to develop their skills in three different types of epidemiologic studies, Cohort, Case-Control, and Ecological, which are performed sequentially during the semester. (Additional simulations are planned to cover three other class topics.) Each study begins with a detailed description of learning objectives associated with the study. Students are then provided with an introduction to the case and a description of the role the students will play. In all three studies the student assumes the perspective and functions of an intern at the EpiVille Department of Health investigating the sudden rise of Susser Syndrome, a rare and debilitating neurological disease, affecting the town.

The student intern is first directed to gather information on the developing case by their supervisor. Students perform this task by consulting the various multimedia assets within the simulation. For example, the student listens to news broadcasts from the local TV station reporting on the Susser Syndrome outbreak. Following leads from the TV broadcasts, the students begin a series of interviews with key employees from the town's companies, hoping to pinpoint possible causes of the outbreak.

Using the information gathered during their fact-finding efforts, the students begin to formulate a study design. Students are expected to consult their course textbook in order to complete this step. When completed, the study design comprises hypotheses and data collection plans, including a selection of populations to study. The data collection step focuses on how to collect the data necessary to complete the epidemiology study. Students focus on issues such as where the disease status data should be collected or what the best source is for gathering information on the exposure variable. The recommendations for data collection are reviewed by the supervisor, who creates a series



of assignments, including obtaining approvals for the study from review boards. The last step in the simulation is to analyze the data collected by reviewing quantitative results. This leads to the formulation of a final report to the Department of Health supervisor.

Throughout the study design, data collection, and data analysis steps, the students are presented with multiple-choice questions to help guide their understanding of the material. The immediate feedback provided by the multiple-choice questions was one of the pedagogical objectives decided during the planning phases of the simulation. Each study ends with a series of discussion questions, including questions geared toward students wishing to go beyond what is covered in the course.

According to Professor Herman, "This interactive environment helps students grasp, in a graphically engaging way, fundamental principles of epidemiologic study design. The flexibility of the tool allows it to be used at a relatively simple level to teach the basics or to take more advanced students deeper into the field. The capacity of the simulations to provide immediate feedback to the student is an especially valuable feature that is difficult to obtain with more traditional text-based exercises."