

Alert:

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Tracking the course of a YES Competition winner

2005-06
YES Competition
for Students

Tell your friends
how the YES
Competition
opened doors
for you.

Guidelines and
online registration
now available

Online submission
deadline

February 1, 2006
by 5:00pm ET

Regional and
national event

April 21-24, 2006

YES Competition winners find their ingenuity continues to be a valuable talent long after the competition is over. When 2003-04 third place winner Bevin Cohen entered the University of Vermont two years ago, she was determined to pursue her interest in epidemiology. The University though does not offer a public health major, so Bevin is pursuing a self-designed one, drawing on the resources of several departments, including sociology, statistics, biology and ethics.

"There are lots of ways to do public health," says Bevin, who won a YES scholarship for her comparison study of hand hygiene practices in neonatal intensive care units. "It's really in every department, because every aspect of the world contributes to our health or unhealthiness."

After the competition, Bevin worked briefly on a research project that tracked the infection rate of babies in a hospital. She is currently studying biostatistics, learning about the proper design of an epidemiological study. She's also beginning to gear up for her senior thesis, which will probably include epidemiological research. "I love researching what others have already done and using that to create something that provides more knowledge for somebody else to use in their study—which then creates even more knowledge," she says.

After college Bevin plans to go to graduate school to prepare for a career in public policy, clinical research or biostatistics. "In epidemiology you are really looking at the biggest possible picture," she says. In particular, she's



Bevin Cohen won a 2003-04 YES Competition scholarship for her comparison study of hand-washing practices in hospital neonatal units.

interested in how depressed conditions in developing countries can lead to re-emerging infectious diseases—which can then move north to create pandemics.

She acknowledges that many students may never have thought about diseases in developing nations, but once they are asked to think about what epidemiology is and how it affects us, they become motivated to do something. "Teaching epidemiology to high school students is not only a good idea but almost a necessity," she says. "Students involved in the YES Competition are fortunate to have realized early on the importance of this course of study."



Young
Epidemiology
Scholars

Visit www.collegeboard.com/yes

New high school epi club sets its agenda

Epidemiology in the classroom



Bring interdisciplinary thinking into the classroom with **free** YES teaching units, available for download on the YES website. The following are just a sampling of the units available:

An Association: TV and Aggressive Acts

A study on television viewing and aggressive behavior is used to teach key epidemiological principles

Examining the Plague: An Investigation of Epidemics Past and Present

A look at the effects of the Black Plague on Medieval Europe and a modern day comparison to the AIDS epidemic



by **Ershela Durreesi**, Senior, Baton Rouge Magnet High School, Baton Rouge
2004-05 YES Competition Regional Semifinalist

Epidemics are as devastating to our society as the worst natural disasters. However, unlike other natural catastrophes, we have ways to control epidemics, and the science of epidemiology is our key. I was fortunate enough last year to be exposed to this marvelous field through the YES Competition. Through the competition, I understood the immense potential of epidemiology to improve human conditions, and realized that the more peers involved, the greater the achievements.

So I started an epidemiology club in my school. The club has a dual mission of exposing students to the fields of epidemiology and public health as career choices, and of informing the community about various epidemics and ways of keeping

Making Epidemiology History: Sir Richard Doll, 1912-2005



Sir Richard Doll receiving the Tyler Prize for Environmental Achievement in 2003.

Sir Richard Doll became an icon in the history of epidemiology when he published his 1954 study that proved smoking causes lung cancer. The publication, "The mortality of doctors in relation to their smoking habits," changed forever the practice of public health. Doll then continued this and other epidemiological research well into his 90s. For the first time back in 1954, the world learned of an undeniable relationship between smoking tobacco and lung cancer.

In a previous work published in 1951, Doll and his colleague Austin Bradford Hill had noted that the overwhelming majority of lung cancer patients in that study had a history of smoking. In that era, however, the most accepted explanations for the cause of lung cancer were exposures to road tar or air pollution. By chance, Doll and Bradford Hill had included one question on their patient questionnaire about smoking habits and were astounded by the results. This evidence was not enough to convince the medical community that smoking could cause cancer.

“A small movement in one high school can have a far-reaching impact.”

healthy. Members discuss the latest groundbreaking news on epidemics, hear prominent speakers in the field of epidemiology and reach out to the community with important information.

This year, our club has instituted an “epidemic-of-the-month.” We choose a topic, research it, share our findings with the club, then have a poster competition that presents information to our school and community. Our first topic for the year is HIV/AIDS—a topic on which many high school students want more information.

We invite students from other high schools to initiate similar clubs in their schools. A national club could then coordinate the efforts of local epidemiology clubs. Members of such a national club could even put their ideas into action by organizing activities or a conference, or by reporting healthcare problems in their communities to health officials.

The initial response to our club has been enthusiastic, and many students have approached me to express their interest. We hope that what begins as a small movement in one high school can have a far-reaching impact—and improve the health of all people nationwide by improving the health of citizens, community by community.

For more information on starting your own epi club, contact Ershela at shela123@hotmail.com.

So Doll and Bradford Hill set out to conduct another study. They asked doctors in the U.K. about their smoking habits, then followed the doctors for years to determine their cause of death. In the publication of the landmark study in 1954, the authors state, “It [is] seen that the death rate from lung cancer increased steadily” from no lung cancer deaths among non-smokers, to fairly high rates of lung cancer deaths among heavy smokers. These findings formed the basis for the first anti-smoking public health policies.

Doll continued the study of UK doctors and other epidemiologic research into his 90s. He was granted knighthood and many accolades for his achievements. When he died in July 2005, fellow cancer researcher Professor Alex Markham noted, “There is already one extraordinary memorial to this truly exceptional individual—the millions of lives that he saved through revealing the truth about the deadly nature of smoking.”

Sources:
David Rising, Associated Press. “Smoking, Cancer Researcher Richard Doll Dies at 92.” July 25, 2005.

Doll R, Hill AB. (1954) The mortality of doctors in relation to their smoking habits. *British Medical Journal*, 228:1451-5.

Katherine Chiang, Great Neck, NY, a sophomore at Princeton, is researching the link between genotypes and drug effectiveness in Hepatitis B patients.

Katherine Elizabeth Dillon, Downingtown, PA, majoring in biology and anthropology at Washington University in St. Louis, spent the summer at the University of Pennsylvania School of Medicine’s Center for Clinical Epidemiology and Biostatistics working on a study dealing with disparities in the outcomes of lower socioeconomic patients diagnosed with hypertension.

Ben Eidelson, Bala Cynwyd, PA, now in his sophomore year at Yale, is considering a major that combines ethics, politics and economics.

Zarabeth Golden, Lighthouse Point, FL, double-majoring in psychology and art at the University of Florida, has been performing research on cognitive problems in the elderly.

Victoria Hunt, San Anselmo, CA, who is studying biology at Cornell University, spent the summer conducting lab research on carbon cycling in forest systems.

Melissa Lau, Basking Ridge, NJ, a biology freshman at MIT, is using epidemiological methods to study depression.

Robert Levine, Lincolnshire, IL, is researching sustainable energy technologies at Middlebury, where he is majoring in molecular biology and biochemistry while minoring in environmental science.

Amit Patel, Niceville, FL, is a freshman majoring in neuroscience at the University of Miami and continues to study epidemiology.

Karen Ryall, Charleston, WV, a freshman and bioengineering major at the University of Pennsylvania is investigating cell motility in breast cancer patients.

Natalia Sanchez, Racine, WI, plans to conduct research on diabetes-related genes at Vanderbilt, where she is double-majoring in biology and Spanish and minoring in medicine, health and society.



The health consequences of a hurricane

by **Amy Pickard Nelson**, PhD, MPH

Over the past few months, the names “Katrina” and “Rita” have become popular names in households across America. The chaos, the death toll, the loss of jobs and businesses have had a major impact on the Gulf Coast and the nation. Hurricanes also exact a price in disease and injury. After Katrina, a public health emergency was declared. So what, exactly, are the health risks of a hurricane?

Injuries

Downed power lines pose an injury hazard, particularly when in contact with standing water. With no electricity, alternative energy and light sources can produce dangerous levels of carbon monoxide (CO) or present fire hazards; at least 51 Hurricane Katrina-associated cases of CO poisoning were reported, including five deaths. Toxins or dangerous chemicals may leak from chemical plants, car batteries, propane tanks or fuel tanks, and gas leaks pose the risk of fire or explosion. Injuries may also occur during the cleanup effort when clearing debris with mechanical equipment and chain saws.

Mold

In flooded areas, mold spores may proliferate in soaked carpets, furniture, tiles and drywall. People with mold allergies may experience respiratory symptoms or mold infections in their lungs. All mold-contaminated material should be thrown away, and infested homes should be treated and dried out before residents move in.

Flooding and infections

When flooding occurs, sewage systems may overflow and contaminate potable water sources with microorganisms that can cause disease if consumed. Additionally, exposure to floodwaters can increase the risk of infected cuts and wounds. After Katrina, at least 22 cases of infection with *Vibrio*, an environmental bacterium, were identified, including five wound-infection associated deaths. Additionally, at least 30 cases of methicillin-resistant *Staphylococcus aureus*, or MRSA, were identified in an evacuee center. “Staph” is commonly carried harmlessly in noses and on skin, but minor cuts or abrasions in the skin can lead to infection.

Evacuation outbreaks

Large numbers of people in close quarters create a risk of outbreaks. Evacuation centers reported dozens of clusters of diarrheal illness after Hurricane Katrina. Transmission of tuberculosis (TB) is of particular concern. Evacuees must be screened and treated for TB. Health authorities also must find patients who were undergoing TB drug therapy at the time of the hurricane to assure continued treatment.

The health consequences of a hurricane or other natural disaster can be significant. Maybe you can research how to better prepare, prevent, treat and track diseases and injuries that result from these catastrophic events. To learn more, check out the Centers for Disease Control’s website at www.bt.cdc.gov/disasters/hurricanes.



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