

EPIDEMIOLOGIST

WHAT IS EPIDEMIOLOGY?

- Originally it meant the study of epidemics
But Epidemiology is more than that
- Epidemiology is the study of anything related to health:
 - WHO is sick
 - WHAT made them sick
 - WHERE are sick people
 - HOW does the sickness spread and progress
 - WHY are some people sick and some people not sick

WHAT IS THE PURPOSE OF EPIDEMIOLOGY?

- The more you know about something (here a health problem), the better you will be able to fix it.
- Problem: People are sick
- Fix: Prevent them from getting sick



WHO



WHERE



WHEN

Epidemiology is the basic science of Public Health

EPIDEMIOLOGIST

AN EPIDEMIOLOGIST is a person that use epidemiology to answer these questions about an illness:

- how many people are ill,
- which people are ill,
- when they are ill,
- what causes their illness,



Epidemiologists are often called "Disease Detectives"

Epidemiologists do fieldwork to determine what causes disease or injury, what the risks are, who is at risk and how to prevent further incidences. They understand the demographic and social trends that result from disease and injury. The initial discovery and containment of an outbreak, such as avian flu or mad cow disease, often comes from epidemiologists. Professionals in this field use statistical analysis, but their approach and methods are distinctly different than what biostatisticians use. Epidemiologists must take into account various hereditary, behavioral, environmental and health care factors; they also must make extensive use of the contributions of biological, clinical and other sciences, including techniques derived from biochemistry and molecular biology.



A team of Epidemiologists

Characteristics

To be a good epidemiologist, you should have strengths in the following areas:

Communication: You need to have strong speaking and writing abilities to better inform the public and community about serious public health risks. You also need to be able to communicate well to work well with colleagues.

Critical thinking: You will need to be able to thoroughly analyze data to figure out how you should respond to serious public health issues.

Pays attention to detail: It is important to be precise and accurate as you move from observation and interview and make conclusions

Strong math skills: Epidemiologists should have highly advanced skills in mathematics and statistics, so they can design strong studies and surveys.

Good teaching skills: Epidemiologists often have to work in community outreach, so they should be able to teach the public about public health matters.

PLAY A GAME to understand what an epidemiologist does:
<http://www.epidemicgame.org/index.html>



PERSONAL HEALTH

PERSONAL HEALTH

- I have fever, a rash and my joints are sore
- I go to the doctor
- The doctor examines me, orders some tests and tells me I have an illness called zika
- The doctor explains to me that it is caused by a virus transmitted by a mosquito
- The doctor prescribes some medications that will make me feel better
- The doctor has many patients

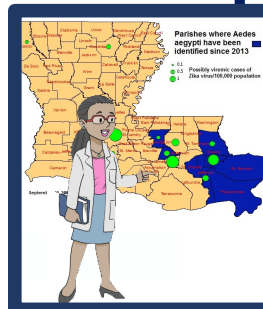


PUBLIC HEALTH

PUBLIC HEALTH

- There are many people who come down with fever, rash and sore joints in one city
- The epidemiologist finds out that all these people have zika, they all return from trips from Caribbean islands and Central America
- The epidemiologist finds out that zika is an illness transmitted by a special type of mosquito
- The epidemiologist work
 - with mosquito control people to show where the illness is spread
 - With the media and associations to explain how to prevent zika

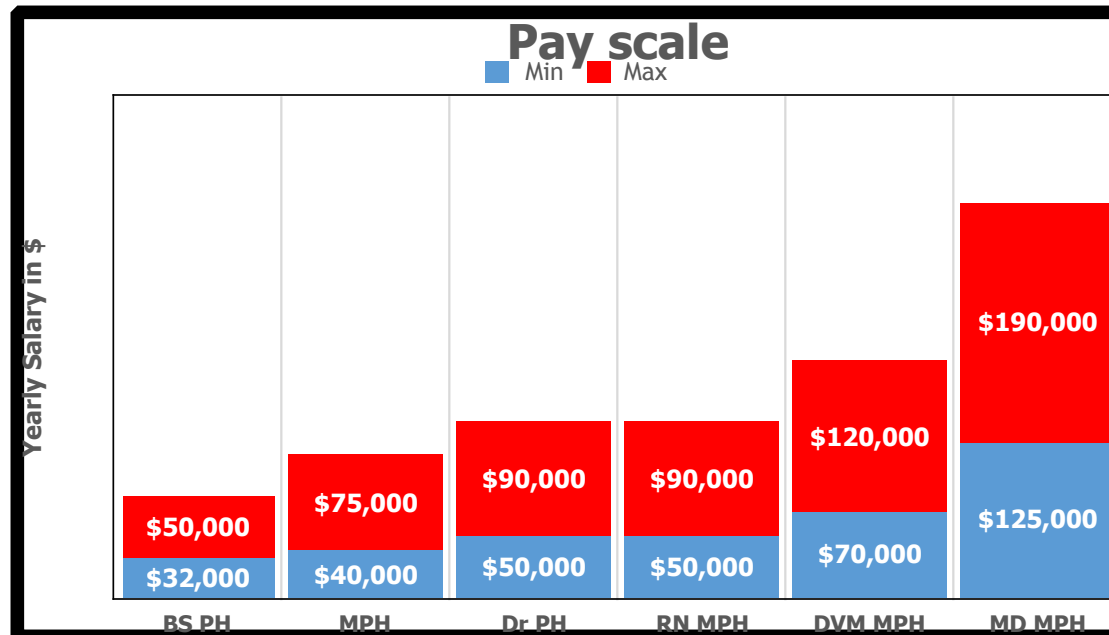
The epidemiologist patient is the entire state



EDUCATION

EDUCATION & TRAINING

- Bachelor in PH _____ 3 to 4 yrs
- Masters in PH _____ BA or BSc+2 yrs
- Dr PH _____ MPH + 2 yrs
- PhD in epidemiology _____ MPH + 4 yrs
- Many epidemiologists also have a medical degree: Physician (MD, DO), Veterinarian (DVM), Nurses (MSN, RN), Laboratory Technician
- Physicians usually are specialists board certified in Preventive Medicine
- Continuing education optional for PH. Physicians, nurses must maintain their continuing education.



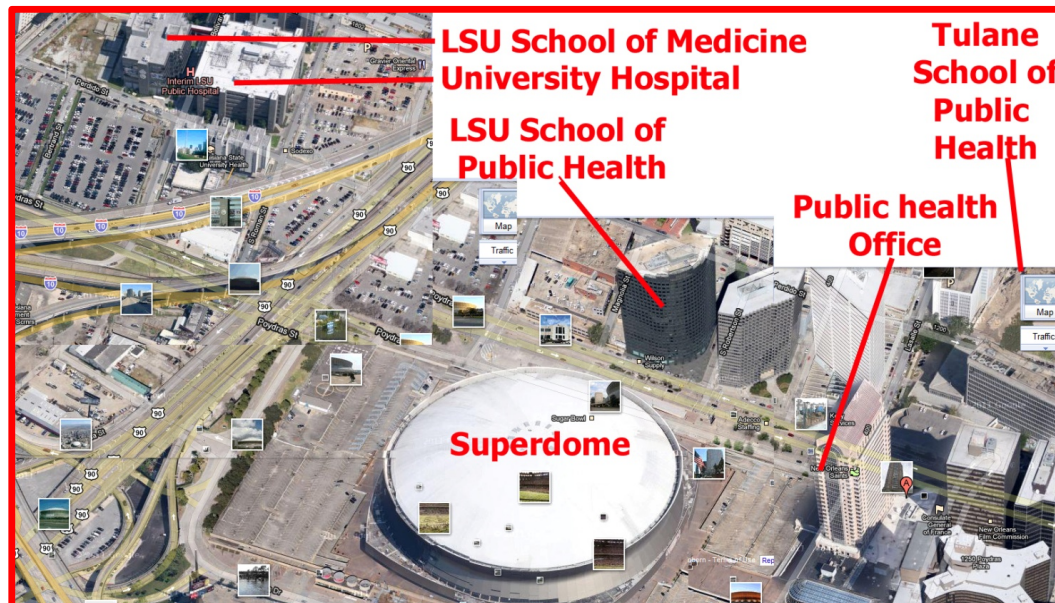
JOBS

EMPLOYMENT OUTLOOK / JOBS

- **PUBLIC HEALTH:**
 - Local health units
 - State health department
 - Federal jobs: Centers for Disease Control (CDC), Food & Drug Admin (FDA), US Dept Agriculture (USDA)
 - International jobs: World Health Organization (WHO), US Agency for International development (USAID)
- **UNIVERSITIES, RESEARCH**
 - Schools of Public Health
 - Dept of Preventive Medicine in Medical, veterinary, Nursing Schools
 - National Institute of Health (NIH)
- **MEDICAL CARE**
 - Hospital groups,
 - Hospital Infection Control
 - Health Insurance Companies
- **NON GOVERNMENTAL ORGANIZATIONS (NGO)**
 - Doctors Without Borders
 - CARE
 - Missionary Groups...



JOB & EDUCATION



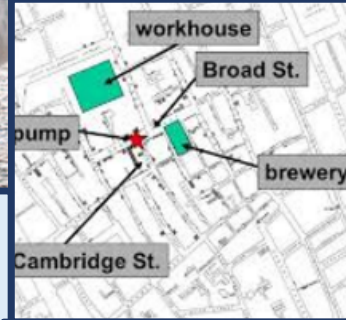
SOME FAMOUS EPIDEMIOLOGIC STUDIES



Lack of Vitamin C among British Sailors & scurvy
Lind 1753



Cowpox protects against smallpox
Jenner 1798



Cholera spread by drinking water in London. Snow 1832



Yellow fever transmitted by Aedes mosquito
Carlos Finlay 1881



Childbed fever & hand washing.
Semmelweis 1847



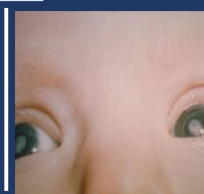
Yambuku Zaire Ebola outbreak. Piot, Pattyn, Van der Groen. 1976



Smoking causes lung cancer
Richard Doll & Bradford Hill 1948



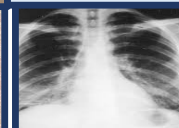
Philadelphia legionnaire outbreak. CDC 1976



Congenital rubella outbreak of cataract
Gregg 1941



Kaposi sarcoma & PC pneumonia & AIDS 1981



REFERENCES



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Straif-Bourgeois, Susanne S., Ratard, Raoult C. "Infectious Disease Epidemiology." Handbook of Epidemiology. 2nd ed. Vol. 51. New York: Springer, 2014. 2041-116. Print

Buck, Carol. The Challenge of Epidemiology: Issues and Selected Readings. Washington, D.C.: Pan American Health Organization, Pan American Sanitary Bureau, Regional Office of the World Health Organization, 1988. Print

Kipple, Kenneth F. The Cambridge World History of Human Diseases. Cambridge: Cambridge University Press. 1993. Print.

WORK ENVIRONMENT



Training: Solving problems together



The 2002 West Nile Louisiana Team



Investigating outbreaks anywhere they are



Go there and see how it looks like: West Nile habitat



Mapping



With the Louisiana "Oyster Navy" to see oyster areas



In Mali, Africa, talking about Ebola medical care



In an Emergency Operating Center in Guinea, Africa



Collecting urine in Cameroon, Central Africa