Epidemiology
cornerstone of public health

USF Health
College of Public Health
Epidemiology is the study of risks, factors and issues affecting the health and well-being of populations. It is considered a cornerstone of population-based health research, and is crucial in identifying risk factors for disease and determining optimal treatment approaches in clinical medicine.

Epidemiology is the foundation and logic of interventions made in the interest of public health and preventive medicine.
Basic Assumptions of Epidemiology

Human disease does not occur at random. Causal and preventive factors can be identified through systematic investigation of different populations or subgroups of individuals in a population in different places or times.
What does an epidemiologist do?

- investigate an outbreak of disease, negative environmental exposure, or cultural factors affecting the health and wellbeing of a population

- Evaluate patterns and determinants of health to develop statistical, mathematical, philosophical, biological theory.

- Design, implement and manage epidemiologic studies to determine the causes, rates and distribution of disease in a population

- Design and conduct clinical trials and community trials

- Evaluate effectiveness of primary and secondary prevention

- Assess quality of health care

One of the CDC’s first lab containment suits worn by a technician inside the animal laboratory during Lassa fever and Ebola hemorrhagic fever research activities. To work in a Biosafety Level-4 (BSL-4) laboratory within close proximity to deadly Level-4 pathogens, specialized protective equipment is worn. (CDC/ Dr. Lyle Conrad)
Employment opportunities for epidemiologists may be found in:

- Hospitals and specialized care facilities
- Universities in faculty teaching & research positions
- Non-profit organizations and international health agencies such as American Cancer Society, World Health Organization (WHO) and the regional office of the Pan American Health Organization (PAHO), Global Health Council.
- Government entities like the Centers for Disease Control and Prevention (CDC), Food and Drug Administration (FDA), US Public Health Service (USPHS), Indian Health Service (HIS), United States Department of Health and Human Services (USPHS), Environmental Protection Agency (EPA), National Institutes of Health (NIH), and state or local health departments.
Lassa Fever was discovered in 1969 in areas of Africa where the disease is often endemic.

It was called Legionnaire’s Disease because an outbreak occurred during a Legionnaire’s convention in Philadelphia in 1976.

Two thousand cases of AIDS were reported in 1981-83. By 1986 it was recognized as an epidemic.


An epidemic of severe acute respiratory syndrome (SARS) spread through Asia and Canada in 2003.

West Nile virus is not new, but the most serious form of meningitis or encephalitis was not considered a serious threat to humans until recently. By 2003, 45 states had reported human cases.

The H1N1 Flu pandemic of 2009 was threatening...
Mercury poisonings reported in non-industrial countries resulting from the population eating flour products where the wheat seed had been treated with methyl and ethyl mercury compounds.

1980s Barcelona hospitals saw 26 epidemics of asthma, which were traced to allergies to soya beans dust when the bean shipments arrived in the harbor. Allergic disease has doubled over the last 20 years, probably from a combination of factors including genetics, the immune system and the environment.
Influenza: New stains of the flu continue to appear and approximately 20,000 Americans die from complications of the flu each year. In the US, the flu pandemics of 1957 and 1968 were associated with 100,000 deaths. The H1N1 strain threat in 2009 was widespread and closely monitored.

Tuberculosis: In the 1940s, scientists discovered the treatments now used TB slowly began to decrease. But in the 1970s and 1980s, TB control efforts in the US were neglected and between 1985 and 1992, the number of TB cases increased.

Anthrax, Botulinum toxin, Smallpox, Plague, Tularemia, and Viral Hemorrhagic Fever are the biological agents likely to be used in a terrorist attack (CDC report).
You might find an epidemiologist...

...tracking lifestyle “diseases”

Lifestyle diseases are diseases that appear more often as countries become industrialized and people live longer. Diet, lifestyle, s Smoking, alcohol, drug abuse, lack of exercise and the environment are thought to increase the risk.

- Cancer: lifestyles of different populations might partly determine their rates of cancer. Diabetes, or complications from diabetes kills 3.8 million people a year-- about the same number as HIV/AIDS.
- Heart Disease: Has been the number one cause of mortality and morbidity in the USA since 1910
- Other Lifestyle diseases include chronic liver disease, Alzheimer's disease, Cirrhosis, Chronic Obstructive Pulmonary Disease, nephritis or chronic renal failure, osteoporosis, stroke, depression, and obesity.
Masters Degrees Offered:

- **MPH in Epidemiology:** The knowledge and skills obtained through the program will enable graduates to characterize the health status of communities.

- **MSPH Program in Epidemiology:** Program is geared toward students who want a solid foundation in research methods and who wish to become members of a public health epidemiologic research team.

- **MPH in Epidemiology & Biostatistics:** Designed to critically evaluate research, formulate strategies, and foster the application of epidemiologic and biostatistical methods for health promotion and disease prevention activities.

- **MPH in Epidemiology & Global Health:** Provides a strong background in analytical skills and methods, for achieving a professional position in the field of international public health, such as international, bilateral, governmental and non-governmental agencies.

- **MPH in Epidemiology & Maternal and Child Health (MCH):** Explores the study of epidemiologic aspects of child bearing, birth outcomes and children's health.

- **MPH in Epidemiology & Global Communicable Disease:** Designed for students interested in infectious diseases and the global epidemic impact they present.

- **MPH Program in Epidemiology for Pediatric Residents or Fellows**
• **Available Dual Degrees (with MPH)**
  - Anthropology (MA or PhD)
  - Biochemistry/Molecular Biology (PhD)
  - Medicine (MD)
  - Physical Therapy (DPT)

• **PHD in Epidemiology**
  - Focus Areas include:
    - Perinatal Epidemiology or Maternal and Child Health
    - Neurological Epidemiology

• **Graduate Certificate in Epidemiology**
  - Fifteen (15) credit hours are required for completion of this Certificate.
To find out more:

Contact the Department of Epidemiology & Biostatistics:

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