Bootcamp in Epidemiology

Course Instructor

Jinkou (Button) Zhao, MD PhD, senior specialist for impact and evaluations, the Global Fund, Geneva, Switzerland; professor of epidemiology, Nanjing Medical University School of Public Health, Nanjing, China

Brief course description

This course intends to provide students with fundamentals of epidemiology. There are two modules, the first focuses on the key concepts and methods, the second focuses on the application of the methods and concepts in research and evaluation.

This course emphasizes the underlying concepts of the epidemiological approach, stressing study design, causal relationship; discusses the calculation and interpretation of measures of frequency, rates and proportions, association and public health impact; discusses sources of study error including the influence of chance, bias, confounding, and effect modification. Basic concepts of standardizing rates, surveillance, and screening are also introduced.

This course uses the 5th Edition of Epidemiology by Leon Gordis as the textbook. Lecturers are experienced epidemiologists in different fields of health programs, currently working at WHO, UNAIDS, the Global Fund and other well-known organizations. Examples used in the course are real and mostly current.

Module II

Course Objective

The objective of this 2-day course is to provide the participants with skills and knowledge on application and use of epidemiology methods, including association of exposure with risk, calculation and interpretation of risk, causal inference, biases, use of epidemiology for evaluations, ethics in applying epidemiology methods. There are 8 subjects, each comprising of lectures, hands-on exercises and discussion.

Target Participants

This course is designed for participants who have attended Module I or have acquired similar level of knowledge and skills but want to apply for research and evaluations or practical applications in international development settings. Main target participants include, 1) PhD candidates on global health at University of Geneva, who found the application of epidemiology methods necessary for their thesis and projects; 2) Professionals managing public health projects/grants at UN organizations, funding agencies, NGOs, private sectors, who want to understand epidemiology methods for their project/grant management; 3) Other

professionals/program managers who want to understand epidemiological methods and their implications when interpreting numbers.

By the end of this training module, participants will learn:

- Measures for the association between exposure and a disease
- Causal inference from the association to the cause
- Biases, confounders and modifiers in the causal inference process
- How to use epidemiology for evaluations
- Ethical considerations in applying epidemiology methods

Preliminary schedule

All participants are required to read pre-assigned materials and prepare a case. The case should be based on their PhD project or daily work. The instruction for the case and pre-assigned materials will be sent to participants 10 days prior to the course.

Day 4 (April 4th 2019)

Data and time	Topic
08:30 - 08:45	Introductions
08:45 - 10:15	Association, risk and measures in different stud designs
10:15 - 10:30	Coffee Break
10:30 - 12:00	Causal inference from the association to the cause
12:00 - 13:00	Lunch
13:00 - 15:00	Biases, confounders and modifiers in the causal inference for different designs
15:00 - 15:15	Coffee Break
15:15 - 16:30	Interactions between environmental and genetic factors in disease etiology
16:30 - 18:00	Exercises (calculation of OR, RR, AR, PAR, etc)

Day 5 (April 5th 2019)

08:30 - 08:45	Recap of Day 1
08:45 - 10:15	Application of epidemiology in evaluating health programs
10:15 - 10:30	Coffee Break
10:30 - 12:00	Epidemiologic approach to evaluating screening programs
12:00 - 13:00	Lunch
13:00 - 15:00	Epidemiology and Public Policy
15:00 - 15:15	Coffee Break
15:15 - 17:00	Ethical and Professional Issues in Epidemiology
17:00 - 18:00	Discussion (issues in applying epidemiology methods)