



Course of Epidemiology of the Graduate Program in Infectious Diseases

Presentation:

Epidemiology is the study of the distribution and determinants of disease frequencies. As such, three fundamental pillars of knowledge constitute its basis, which are the clinic, the statistics and the collective health. Learning epidemiology is acquiring a powerful tool for the practice of health promotion in human populations. Its learning requires the rational use of teaching resources, and dedication to the study and discussion of its concepts. These are our leading goals in this course.

Objective:

Enable graduate students to use the epidemiological knowledge to practice health promotion in their professional activities through performance in the following aspects:

- Study design.
- Critical reading of the literature.
- Data analysis and information production.
- Epidemiological investigation.

Content:

- Measures in Epidemiology.
- Risk assessment.
- Evaluation of diagnostic tests.

- Variability and bias.
- Design of epidemiological studies.

Evaluation:

The students' evaluation will include weekly exercises about the content, and two tests along the course. The exercise represents an individual activity that will allow an assessment of the student's performance concerning the topic in question. There will be no score for the exercises performed. However, the graduate student who fails to do so will not be entitled to the credit.

The scores of the evaluations will range from zero to ten, and it will be necessary an average of seven in the two tests for conceiving the credit to the student. If the student fails to achieve the minimum average in the two evaluations, he/she must submit to the Final Test. The sum of the Final Test grade and the partial average will constitute the basis of the final grade, which must be at least six to guarantee approval.

Program:

02/06/2022: Introductory class

14/06/2022: Measures in Epidemiology I. Prof. Creuza Rachel Vicente.

- Measures of disease occurrence:

- Risk.
- Prevalence and incidence.
- Aspects related to the calculation of incidence and prevalence (incidence density, definition of the population at risk).
- Differences between risk, incidence and prevalence.
- Special types of incidence and prevalence (morbidity, mortality, attack rate, prevalence by point, prevalence by period).
- Interrelation between incidence and prevalence (prevalence, incidence and duration).
- Uses of incidence and prevalence measures.
- Crude, category-specific and adjusted (standardized) rates.
- Survival.

23/06/2022: Measures in Epidemiology II. Prof. Crispim Cerutti Junior.

- Association measures:

- 2X2 tables.
- Relative risk and odds ratio.
- Standardized mortality ratios.
- Proportional mortality ratio.
- Attributable risk.
- Population attributable risk.
- Interpretation of association measures.

30/06/2022: Epidemiological Investigation. Prof. Crispim Cerutti Junior.

- Data collect.
- Case definition.
- Active case search.

- Data analysis.
- Analytical study.
- Attack rates and risk ratios.

07/07/2022: Evaluation of diagnostic tests. Prof. Crispim:

- Probability lines.
- Sensitivity and specificity.
- Predictive values.
- Cut off points.
- Probability ratio.
- ROC curves.
- Screening tests: bias of precedence and bias of duration.
- Criteria for applying a screening test.

Variability and bias. Prof. Crispim:

- Variability in epidemiological research (random error vs. precision; systematic error or bias vs. accuracy or validity).
- Variability at the individual level (related or not to the measure).
- Variability in population assessments (sample variability).
- Variability in research studies (precision related to sample size).
- Validity (internal and external).
- Biases:
 - Selection.
 - Information (differential and non-differential bias, memory bias, interviewer bias, healthy worker bias).
 - Confounding.

12/07/2022: Epidemiological studies. Prof Rachel.

- Descriptive studies:
 - Case study.
 - Case series.

- Cross sectional study.
- Ecological study (aggregate).
- Analytical studies:
 - Cohort.
 - Case-control.
 - Clinical trial.
 - Community trial (aggregate).

21/07/2022: First Test.

28/07/2022: Case study, case series, cross-sectional and ecological studies.

Discussion of the first test. Prof. Crispim:

- Case study and case series.
- Cross sectional study.
- Formulation of hypotheses based on descriptive studies.
- Variables regarding time, place and person.
- Ecological study.

04/08/2022: Case-control study. Prof. Rachel.

- Definition and selection of cases.
- Selection of controls.
- Determination of outcome and exposure.
- Biases.
- Interpretation of the hypotheses derived from the data.

11/08/2022: Cohort study. Prof. Crispim:

- Prospective and retrospective cohort.

- Selection of the exposed population.
- Selection of the comparison group.
- Information sources.
- Approach to follow-up.
- Biases.
- Effects of losses and non-participation.

Clinical Trial and Community Trial. Prof. Crispim:

- Selection of the study population.
- Allocation of regimens.
- Maintenance and assessment of compliance.
- Uniformity and ascertainment in determining the outcome.
- Factorial design.
- Reasons for early termination.
- Duration of the follow-up.
- Interpretation.

12/08/2022:

15:00: Second Test.

17:00: Discussion of the Test.

13/08/2022: Final Test (online).

Main Bibliography:

1. Greenberg, Raymond S.

Medical Epidemiology / John William Eley, Stephen R. Daniels, John R. Boring III, Raymond S. Greenberg and W. Dana Flanders, - 5th ed. - New York: Lange Medical Book / McGraw-Hill. 2015 (the third edition is available in the library).

Classes: Variability and bias; Evaluation of Diagnostic Tests.

2. Hennekens, Charles H.

Epidemiology in Medicine / Charles H. Hennekens, Julie E. Buring. Edited by: Sherry L. Mayrent. - 1st. ed. - Philadelphia: Lippincott Williams & Wilkins. 1987 (it is available in the library).

Class: Measures in Epidemiology II; Case study, case series, cross-sectional; ecological study, and clinical trial.

3. Rouquayrol, Maria Zélia.

Epidemiologia e Saúde/ Maria Zélia Rouquayrol, Naomar de Almeida Filho – 8 ed. – Rio de Janeiro: MEDSI. 2017.

4. Medronho, Roberto A.

Epidemiologia. Roberto A. Medronho, Katia Vergetti Bloch, Ronir Raggio Luiz, Guilherme L. Werneck – 2 ed. – São Paulo: Atheneu. 2009.

Complementary Bibliography:

1. Fletcher, Robert H.

Epidemiologia Clínica/ Robert H. Fletcher, Suzanne W. Fletcher; tradução: Roberta Marchiori – 5 ed. – Porto Alegre: Artmed. 2014.

2. Pereira, Maurício Gomes.

Epidemiologia. Teoria e Prática/ Maurício Gomes Pereira – 1 ed. – Rio de Janeiro: Guanabara Koogan. 1995.

LOCAL:

**Sala 05 - Rosa Maria C. Rego Paranhos
(Vulgo Elefante Branco)**

**As aulas dos dias 12/07/22 e 12/08/22
serão ministradas no auditório do
prédio administrativo do CCS.**