Advanced training Course Clinical Epidemiology

The course is structured in 5 modules; each module comprises a combination of lectures and computer practicals. The statistical package Stata is used throughout. Case studies and literature examples will be used extensively to give students an appreciation for the application of epidemiologic principles to clinical settings. Each student will work on a project under the supervision of a tutor. These projects will be presented and discussed with all the students and the faculty at the end of the 1-year course.

MODULE 1: Introduction to epidemiological and biostatistical methods
Rozzano, 10-14 December 2018
This module provides an introduction to epidemiology and biostatistical methods. The epidemiological part covers basic principles of clinical epidemiology including development of research questions, options in study design, definition of bias, validity and generalizability. The introduction to biostatistics focuses on statistical inference: confidence intervals, statistical tests and likelihood theory. Theoretical sessions are followed by more applied sessions using the software Stata that is introduced during the module.

MODULE 2: Observational studies in clinical epidemiology
Rozzano, 21-25 January 2019
This module familiarizes students with use and analyze of observational studies in clinical epidemiology. The following topics are addressed: natural history of disease, design of case-control and cohort studies, application of these studies to conduct etiological research in clinical epidemiology and address issues of safety and short- and long-term side effects. These epidemiological sessions are followed by two days focused on generalized linear models and sample size calculation.

MODULE 3: Diagnostic and prognostic studies
Rozzano, 18-22 February 2019
The module covers theory, methods and practice of diagnostic and prognostic research. It covers basic and more advanced concepts, including sensitivity, specificity, likelihood ratios, ROC curves, discrimination, calibration, net reclassification. It discusses options in study design and potential sources of bias. Finally, it focuses on modelling, validation and case-studies.

MODULE 4: Intervention trials and survival analysis
Rozzano, 18-22 March 2019
This module is designed to introduce students to the theory, practice and analysis of intervention studies, including randomized controlled trials, non-randomized interventions and community interventions. Based on a range of examples students learn how to critically interpret and generalize results obtained from these studies. This module also focuses on survival analysis, including non-parametric methods, regression methods and more advanced issues, such as competing-risks.

MODULE 5: Advanced topics in clinical research
Rozzano, tbd April 2019
The last module covers relevant advanced topics in clinical epidemiology. These include the analysis of repeated measures and missing data, introduction to causal inference methods, cost-effectiveness analysis, molecular methods applied to clinical epidemiology, and emerging issues in clinical epidemiology

THESIS DEFENSE
2 days October 2019