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MEDICINE AND PHARMACY
CLUJ-NAPOCA
ROMANIA

"IULIU HATIEGANU" UNIVERSITY OF MEDICINE AND PHARMACY DOCTORAL SCHOOL

NEUROSCIENCE

PROGRAM

2019-2020 | SECTION 3

16 - 17 JANUARY, 2020
"MULTIMEDIA" AUDITORIUM, "IULIU HATIEGANU" UMF CLUJ-NAPOCA
8 VICTOR BABES STREET | CLUJ-NAPOCA | ROMANIA

PhD NEUROSCIENCE PROGRAM COORDINATOR

Dafin F. Mureşanu

President of the European Federation of NeuroRehabilitation Societies (EFNR)

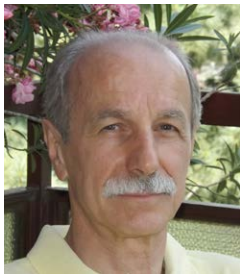
Chairman of EAN Communication and Liaison Committee

Member of EAN Scientific Committee

Past President of the Romanian Society of Neurology

Professor of Neurology, Chairman Department of Neurosciences "Iuliu Hatieganu" University of Medicine and Pharmacy, Cluj-Napoca, Romania

INTERNATIONAL GUEST LECTURER



Ettore Beghi

Co-Chair EAN Scientific Panel on Neuroepidemiology

IRCCS Istituto Mario Negri, Milano, Italy

Maurizio Leone

EAN Guideline Production Group

Neurology Unit, Department of Medical Sciences,
Scientific Institute for Research and Health Care
"IRCCS Casa Sollievo della Sofferenza",
S. Giovanni Rotondo, Italy

Johannes Vester

Invited Associate Professor, Department of Neurosciences, "Iuliu Hatieganu" University of Medicine and Pharmacy, Cluj-Napoca, Romania

Senior Consultant Biometry and Clinical Research

idv - Data Analysis and Study Planning, Germany

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COURSE PROGRAM

COURSE PROGRAM

JANUARY 16TH, 2020

"MULTIMEDIA" AUDITORIUM, "IULIU HATIEGANU" UMF CLUJ-NAPOCA

8 VICTOR BABES STREET | CLUJ-NAPOCA | ROMANIA

09:50 – 10:00	Welcome Address
10:00 – 10:40	Maurizio Leone / Italy Study design
10:40 – 11:20	Maurizio Leone / Italy How to search evidence in the literature
11:20 – 11:40	Coffee break
11:40 – 12:20	Maurizio Leone / Italy How to summarize clinical studies for guidelines and clinical decision making
12:20 – 13:00	Maurizio Leone / Italy Writing a research protocol for a descriptive epidemiologic study
13:00 – 14:30	Session Break
14:30 – 15:10	Johannes Vester / Germany Basic understanding of a statistical test
15:10 - 15:50	Johannes Vester / Germany Effect sizes and confidence intervals – basic understanding of principle biometric features in clinical research
15:50 – 16:10	Coffee break
16:10 – 16:50	Johannes Vester / Germany Interpreting meta-analyses within the framework of evidence-based medicine
16:50 – 17:30	Johannes Vester / Germany The importance of quality assurance

COURSE PROGRAM

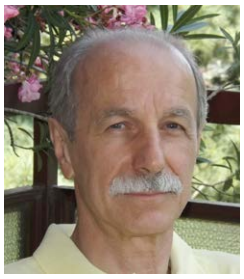
JANUARY 17TH, 2020

"MULTIMEDIA" AUDITORIUM, "IULIU HATIEGANU" UMF CLUJ-NAPOCA

8 VICTOR BABES STREET | CLUJ-NAPOCA | ROMANIA

10:00 – 10:40	Ettore Beghi / Italy How to write and submit a scientific report
10:40 – 11:20	Ettore Beghi / Italy Controlled clinical trials: methodology, types, phases
11:20 – 12:00	Ettore Beghi / Italy The global burden of disease

INTERNATIONAL GUEST LECTURERS



ETTORE BEGHI
ITALY

Head of the Laboratory of Neurological Disorders (since 1996) at the "Mario Negri" Institute, Milano. Former Research Fellow at the Department of Medical Statistics and Epidemiology, Mayo Clinic, Rochester, MN (1982-83). Associate Editor of EPILEPSIA OPEN. Member of the Editorial Board of 5 journals (Neuroepidemiology, Epilepsia, Clinical Neurology & Neurosurgery, Clinical Drug Investigation, ALS & Frontotemporal Dementia) and referee of more than 20 journals. Past or current member (or chair) of the following scientific societies/groups: Mayo Alumni Association, Italian Neurological Society, Italian League against Epilepsy, Italian Neuroepidemiology Section of the INS, Neuroepidemiology Section, AAN, Commission "Epilepsy, Risks, and Insurance" of the IBE, Commission "Antiepileptic Drugs" of the ILAE, Cochrane Epilepsy Group, Commission on the Burden of Epilepsy of the ILAE, International Subcommittee of the AAN, Course Director at the American Academy of Neurology, European ALS registry, Italian Epilepsy Study Group, Epilepsy and Quality of Life Study group, Italian Drug Agency (AIFA)(consultant), European Medicines Agency (consultant), Fellow of the AAN (FAAN), President of the Italian League against Epilepsy (LICE), Co-Chair ILAE Commission on the Epidemiology of Epilepsy, Member of the ILAE Task Forces on .Epilepsy and Driving and Epilepsy in the Elderly.

Author of more than 400 indexed scientific publications in the field of epilepsy (epidemiology, prognosis, treatment), peripheral neuropathy (epidemiology, prognosis, treatment), amyotrophic lateral sclerosis (ALS) (epidemiology, prognosis, treatment), myasthenia gravis (MG) (epidemiology, prognosis), Parkinson's disease (epidemiology), headache (epidemiology), and stroke (epidemiology).

MAURIZIO LEONE
ITALY

Maurizio A. LEONE, MD, is Director of the Neurology Unit at the Clinical Research Institute IRCCS "Casa Sollievo della Sofferenza" in San Giovanni Rotondo, Italy. Prior, he was head of the Multiple Sclerosis Centre of University Hospital in Novara. Born in 1955, he took his medical degree at the University of Torino in 1980. He was Guest Researcher at the Neuroepidemiology, Branch, NINCDS, NIH, Bethesda, USA (1986-7). He was Consultant at the Laboratorio di Neurologia, "Mario Negri" Pharmacological Institute in Milan (1998-2012). He is member of the Scientific Committee of the European Academy of Neurology and heads the EAN guideline production group. He was President of the Italian Society of Neuroepidemiology in 2012-4, and is currently member of the board of Italian Society of Neurology, and honorary member of the Moldovan Society of Neurologists. He serves as Associate Editor for the European Journal of Neurology and Frontiers in Neurology, and is referee for many neurological journals. Dr. Leone authored 167 papers in peer-reviewed journals in the area of neuroepidemiology –including amyotrophic lateral sclerosis, multiple sclerosis, epilepsy alcohol-related neurological diseases- and of evidence-based Neurology.

JOHANNES VESTER
GERMANY

Born, 1952, he specialized in Veterinary Medicine between 1971 and 1974 at the University in Munich, then changed to the University in Cologne in 1974 and specialized in Human Medicine from 1974 to 1980. In 1976 to 1979, he also studied biometric methods for pharmacology and clinical research at the Institute for Data Analysis and Study Planning in Munich.

While studying human medicine, he completed research work on pattern recognition in the visual brain and developed a pharmacodynamic Neuron Simulation Model at the Institute for Medical Documentation and Statistics of the University at Cologne. From 1985 to 1995, he was member of the Ultrahigh Dexamethasone Head Injury Study Group and leading biometrician of the German GUDHIS Study.

Since 1982 has been holding advanced training courses on biometry for professionals in clinical research and university establishments.

Since 1995 he is Senior Consultant for Biometry & Clinical Research. He planned and evaluated about 150 randomized clinical studies worldwide and is member of various international Advisory Boards and Steering Committees including participation as biometric expert in regulatory authority panels and in FDA, EMEA, and BfArM hearings. He is also elected fellow in international scientific organizations and statistical peer reviewer in leading medical journals.

DAFIN F. MUREȘANU
ROMANIA

Professor of Neurology, Senior Neurologist, Chairman of the Neurosciences Department, Faculty of Medicine, "Iuliu Hatieganu" University of Medicine and Pharmacy Cluj-Napoca, President of the European Federation of Neurorehabilitation Societies (EFNR), Co-Chair EAN Scientific Panel Neurorehabilitation, Past President of the Romanian Society of Neurology, President of the Society for the Study of Neuroprotection and Neuroplasticity (SSNN), Member of the Romanian Academy, Member of the Academy of Medical Sciences, Romania, secretary of its Cluj Branch. He is member of 17 scientific international societies (being Member of the American Neurological Association (ANA) - Fellow of ANA (FANA) since 2012) and 10 national ones, being part of the executive board of most of these societies.

Professor Dafin F. Muresanu is a specialist in Leadership and Management of Research and Health Care Systems (specialization in Management and Leadership, Arthur Anderson Institute, Illinois, USA, 1998 and several international courses and training stages in Neurology, research, management and leadership). Professor Dafin F. Muresanu is coordinator in international educational programs of European Master (i.e. European Master in Stroke Medicine, University of Krems), organizer and co-organizer of many educational projects: European and international schools and courses (International School of Neurology, European Stroke Organisation summer School, Danubian Neurological Society Teaching Courses, Seminars - Department of Neurosciences, European Teaching Courses on Neurorehabilitation) and scientific events: congresses, conferences, symposia (International Congresses of the Society for the Study of Neuroprotection and Neuroplasticity (SSNN), International Association of Neurorestoratology (IANR) & Global College for Neuroprotection and Neuroregeneration (GCNN) Conferences, Vascular Dementia Congresses (VaD), World Congresses on Controversies in Neurology (CONy), Danube Society Neurology Congresses, World Academy for Multidisciplinary Neurotraumatolgy (AMN) Congresses, Congresses of European Society for Clinical Neuropharmacology, European Congresses of Neurorehabilitation). His activity includes involvement in many national and international clinical studies and research projects, over 400 scientific participations as "invited speaker" in national and international scientific events, a significant portfolio of scientific articles (193 papers indexed on Web of Science-ISI, H-index: 21) as well as contributions in monographs and books published by prestigious international publishing houses.

Prof. Dr. Dafin F. Muresanu has been honoured with: „Dimitrie Cantemir" Medal of the Academy of The Republic of Moldova in 2018, Ana Aslan Award 2018 - "Performance in the study of active aging and neuroscience", for the contribution to the development of Romanian medicine, National Order "Faithful Service" awarded by the President of Romania in 2017; "Iuliu Hatieganu" University of Medicine and Pharmacy Cluj-Napoca, Faculty of Medicine, the "Iuliu Hatieganu Great Award 2016" for the best educational project in the last five years; the Academy of Romanian Scientists, "Carol Davila Award for Medical Sciences / 2011", for the contribution to the Neurosurgery book "Tratat de Neurochirurgie" (vol.2), Editura Medicala, Bucuresti, 2011; the Faculty of Medicine, "Iuliu Hatieganu" University of Medicine and Pharmacy Cluj-Napoca "Octavian Fodor Award" for the best scientific activity of the year 2010 and the 2009 Romanian Academy "Gheorghe Marinescu Award" for advanced contributions in Neuroprotection and Neuroplasticity.

ABSTRACTS

HOW TO WRITE AND SUBMIT A SCIENTIFIC REPORT

ETTORE BEGHI
IRCCS Istituto di Ricerche Farmacologiche Mario negri, Milano, Italy

Any scientific report should be structured in different sections: abstract, introduction, methods, results and conclusions.

The abstract is a fundamental section of the article. The reader must decide whether or not to read the full report. The abstract must be short (150-250 words) and, if possible, structured. It must include clear and concise findings, it must include the same information reported in the full text, must be understandable by a wide audience, and convince the reader that the study is important.

The introduction must provide sufficient baseline material ("background") represented by antecedent studies, including unsolved questions. It must illustrate precisely the object of the study and the research hypothesis(es) and must be concise without exemplifying exceedingly the outline of the problem.

The scope of the Methods section is to describe the methodology of the study to help other investigators: 1. to assess the study design and methods; 2. to repeat the experiment. Diagrams or figures may be necessary to describe the study design. The target population, the definitions of the variables to be included in the statistical analysis plan must be clearly defined.

In the Results, data should be presented objectively avoiding interpretations and comparisons. The main findings should be described in the text, leaving the details in tables and figures. Data should be presented in a logical order and duplications/repetitions should be avoided.

The scope of the Discussion section is to explain the results and support the conclusions, comparing the personal data with other reports. The discussion should emphasize concordant findings and try to explain discordant findings. Errors and limitations of the study should be discussed. Alternative explanations of the study findings should be offered. Unsolved questions and future steps should be also discussed. The most significant results should be commented with reference to the research hypothesis. The key points of the study should be reiterated without introducing new analyses or explanations.

The authors must be only those who actively contributed to the study. The first author should be the principal investigator. The order of presentation should reflect the contribution of each author to the study. The last author is the second contributor to the study and is the senior member of the group.

The choice of the journal is based on two important factors: 1. The potential readers of the article; 2. The main focus of the journal. The journal's Editor may decide to reject the manuscript without sending it to the reviewers because the contents do not fulfill the scopes of the journal. If pertinent, the manuscript is sent to two or more reviewers that must evaluate the text in terms of priority or acceptance, minor revisions, major revisions, or rejection. The choice of reviewers is fundamental because their contribution supports the credibility of the journal. A reviewer must be an expert in the field of the research and must give objective and motivated judgments, making constructive queries. When the reviewers' critiques have been received, the Editor makes the final decision. If reviewers provide contrasting judgments, the Editor may decide to accept or reject the manuscript based on personal considerations. More frequently, the manuscript is sent to a third reviewer whose judgment may be conclusive. Reviewers may make their queries based on modalities that vary from case to case. If major revisions are required, publication is not granted. All the points raised by the reviewers must be meticulously addressed. Each point raised by a reviewer should be addressed separately offering explanations, making changes, or explaining rebuttal . If the author decides to rebut a query, the arguments should be strong and not criticizable. The author may contend the Editor's decision asking for further review; this is feasible provided that the arguments raised by the reviewer are not motivated or perhaps specious. The author has the right to ask the Editor to deliver the manuscript to one or more specific reviewers or not to send the manuscript to one or more specific reviewers. The Editor has the right to accept or reject the author's request.

CONTROLLED CLINICAL TRIALS: METHODOLOGY, TYPES, PHASES

ETTORE BEGHI
IRCCS Istituto di Ricerche Farmacologiche Mario negri, Milano, Italy

The randomized clinical trial (RCT) represents the best model to assess the efficacy, tolerability and safety of any treatment for all clinical conditions, including neurological disorders. The structure of the trial reflects the need to disentangle the effects of an experimental treatment (to be compared to one or more control treatments) from variables with prognostic significance, which may act as confounders and to control the expectations of the patients and the caring physicians. To perform this task, a number of restrictions are in place to make the experimental and the control group highly comparable and to show statistically significant differences between the experimental groups and the controls in a relatively limited timeframe. These strengths are, at the same time, limitations of the RCT and affect the external validity, ie the applicability of the results in clinical practice.
The major steps in the planning and conduction of an RCT include the definition of the study population, the random assignment of treatments, the choice of the measures of treatment effects, the duration of the experiment, the assessment of the tolerability and safety of the treatment, and the choice of alternative design models. In doing this, a constant reference will be made to the peculiarities (and diversities) of neurological disorders. Other aspects of the RCT protocol (that will not be addressed here) include administration, funding, quality control, and the infrastructure. These sources can be addressed by those interested in regulatory matters.

The major steps in planning and conducting an RCT include study population, diagnosis, randomization process, blinding procedures, end-points, clinical & statistical issues, duration of the experiment, adverse treatment effects and internal & esternal validity. The study population must be homogeneous in terms of disease characteristics and outcome in order to disentangle the effects of treatment from the «natural history» of the disease. In most [neurological] diseases the diagnosis is strongly dependent on clinical judgment. The inclusion of patients with erroneous diagnosis tends to dilute treatment effects. Bias may be greater in multicenter trials. Clinical assessment and diagnostic tests may have poor validity and reliability.

The randomization is the procedure aimed at removing systematic errors, producing balanced comparisons and quantifying errors attributable to chance. It exerts an active control on the procedures adopted by the investigator to assign a treatment. An «impartial» assignment does not always correspond to a «balanced» assignment of treatments (unequal distribution of prognostic factors in the treatment arms). Placebo is justified by the observation that even ineffective treatments may be followed by improvements due to chance fluctuations (regression to the mean) or the expectancy of a therapeutic benefit. Placebo is most appropriate in studies in self-limiting diseases, mild clinical condition, diseases deprived of effective treatments. Placebo is not indicated at the presence of effective treatments for ethical reasons. Blindness is the procedure adopted to increase the objectivity of an observation, preventing the expectations of both patient and investigator. Blindness may refer only to the patient (single), both patient and investigator (double), and may also include the assessor of the outcome (triple). Particularly important for treatments requiring self-assessment and for "soft" end-points. The end-points are measure units of treatment efficacy They must be, where possible, the result of observations that are accurate (reflecting the truth) e reproducible (confirmed by different investigators). Accurate and reproducible observations imply the use of «hard» rather than «soft» end-points. Primary end-points are the measure used to confirm or disprove treatment efficacy; sample size is calculated on the primary end-points. Secondary end-points are additional measures that complement primary end-points; results based on secondary end-points can be only used to generate hypotheses for subsequent studies. The statistical analysis implies the assessment of the efficacy of an intervention is based on the comparison of the frequency of occurrence of significant events in patients given the experimental and the control treatment. The comparison is based on a probabilistic analysis, that is the fundament of the statistical analysis.

An investigational treatment is effective when a significant difference is found against a comparator in the impact on pre-specified end-points measuring the outcome of the disease. The larger the sample the higher the probability to find a statistically significant difference. An investigational treatment is effective when a significant

difference is found against a comparator in the impact on pre-specified end-points measuring the outcome of the disease. The larger the sample the higher the probability to find a statistically significant difference. For practical and economic reasons, the randomized trial must have limited duration. A limited duration is dictated by the need to preserve compliance, reduce drop-outs, and contain costs. Symptoms/signs should recur at a frequency sufficient for the event to be captured during the course of the experiment. Patients with more severe disease varieties are most frequently enrolled. Safety/tolerability is a pre-requisite of any investigational treatment. Newer drugs brought to the market products with less adverse effects and interactions. This does not prevent the occurrence of rare adverse events, which can be detected only when the drug is given to a number of patients greater than those exposed in the experimental phase.

The phases of an RCT are the following: Phase I: clinical pharmacology & toxicology; Phase II: preliminary assessment of efficacy and safety/tolerability of treatment, dose ranging, pharmacokinetics & pharmacodynamics; Phase III: pivotal study to assess treatment efficacy and safety/tolerability; Phase IV: Post-marketing surveillance. RCTs can be of two major types: "Explanatory", ie they measure treatment effects adjusting for confounding from other prognostic indicators (Elevated internal validity); "Pragmatic": measure treatment effects in populations and settings replicating clinical practice (Elevated external validity).

THE GLOBAL BURDEN OF DISEASE

ETTORE BEGHI
IRCCS Istituto di Ricerche Farmacologiche Mario negri, Milano, Italy

The Global Burden of Disease (GBD) is today the most exhaustive initiative to measure levels and geographic and temporal trends of diseases and injuries worldwide. The GBD is coordinated by the Institute for Health Metrics and Evaluation (IHME, University of Washington) and is funded by Bill & Melinda Gates Foundation. This collaboration involves more than 3,000 investigators from 146 countries. The data, collected and analyzed by the GBD collaborators, capture premature mortality and disability for more than 300 diseases and injuries in 188 countries, by sex and age from 1990 to 2017, with comparisons with time, within populations and countries. The instruments developed by the IHME for data analysis can be used at global, national and regional level to assess the population health in the entire world.

The GBD collaborators perform a systematic review of epidemiological studies on all clinical conditions. Included are representative, population-based surveys and reporting of prevalence, incidence, remission rate, excess mortality rate, relative risk of mortality, standardized mortality ratio or with-condition mortality rate. Excluded are studies with no clearly defined sample (eg, clinic attenders or patient organization members with non-specific or non-representative catchment area).

The population health is measured using the Disability-Adjusted Life Years (DALYs), a summary metric representing health gap. DALYs measure the state of a population's health compared to a normative goal. The goal is for individuals to live the standard life expectancy in full health. DALYs are the sum of two components: Years of Life Lost (YLLs) due to premature mortality, and Years Lived with Disability (YLDs). YLLs are computed by multiplying the number of deaths at each age x by a standard life expectancy at age x. The standard selected represents the normative goal for survival and has been computed based on the lowest recorded death rates across countries. YLDs are computed as the prevalence of different disease-sequelae and injury-sequelae multiplied by the disability weight for that sequela. Disability weights are selected on the basis of surveys of the general population about the loss of health associated with the health state related to the disease sequela. DALYs are an absolute measure of health loss; they count how many years of healthy life are lost due to death and non-fatal illness or impairment. They reflect the number of individuals who are ill or die in each age-sex group and location. Population size and composition influences the number of DALYs in a population.

The GBD disease-and-injury cause list is a hierarchical list of diseases and injuries. At the first level of disaggregation, causes are divided into three broad groups: communicable, maternal, neonatal, and nutritional disorders; non-communicable diseases; and injuries. At each level in the hierarchy, the cause list provides a set of mutually exclusive and collectively exhaustive categories. The available data are presented in the world population, world super-regions, countries, and – for some countries – at sub-regional levels. Data are also disaggregated by age, sex, and socio-economic status.

An overview of the most recent GBD findings will be performed paying special attention to neurological and mental disorders.

STUDY DESIGN

MAURIZIO LEONE
University of Piemonte Orientale, Novara, Italy

This presentation will be a preliminary exploration of different study designs that will be deeper outlined in the following presentations. The choice of the study design has to be driven by a very clear research hypothesis that must always be clearly stated in the protocol of the study. The most usual study designs will be presented for observational as well experimental studies. Study designs will be placed in hierarchical order according to the pyramid of evidence (case reports and clinical series, cross sectional, case-control and cohort studies), and the strengths and weaknesses of each design will be stressed. Experimental studies will be discussed. Special emphasis will be given to studies for evaluating accuracy and reproducibility of diagnostic tests. Optimization of study design is a fundamental point to improve research, to avoid repeatability of studies and increase reproducibility of research.

HOW TO SEARCH EVIDENCE IN THE LITERATURE

MAURIZIO LEONE
University of Piemonte Orientale, Novara, Italy

The scope of this lecture is to introduce students to the knowledge and use of the medical literature for answering clinical and research questions. Firstly, the pyramid of the production of the medical literature will be presented, starting from the primary studies up to systematic reviews, technology assessments and guidelines. An outline of the principal data-banks of primary and secondary literature will be presented, including the Cochrane library. Examples will be given of the entire procedure, from breaking down a clinical practice or research question, to where to search, how to generate search terms, how to use MeSH, filters, limits, and others. Lastly examples will be given on how to report literature searches for publication, including PRISMA.

HOW TO SUMMARIZE CLINICAL STUDIES FOR GUIDELINES AND CLINICAL DECISION MAKING

MAURIZIO LEONE
University of Piemonte Orientale, Novara, Italy

The first part of this lecture will explain the difference between background and foreground questions, and how to formulate clinical questions that can be answered, introducing the format of PICO questions (Population, Intervention, Comparator, and Outcome). Examples will be offered and student will be asked to identify clinical questions from their clinical daily experience and then apply the PICO format to create searchable clinical queries. The difference between disease-oriented and patient-oriented outcomes will also be outlined. The second part includes an overview of systematic reviews with examples from a Cochrane review, and the difference between systematic and narrative reviews. A short introduction of the metanalysis will be given with examples of interpretation of a forest plot. Lastly, an overview of clinical practice guidelines will be provided. We need guidelines in Neurology for several reasons, including the fact that not all medical decisions are based on evidence, deterioration of knowledge over time, delay in transferring results from research to clinical practice, geographical variations in clinical practices, and limited resources. The characteristics of guidelines will be explained, differentiating with other documents with some of indications for the clinical practice but not clinical practice guidelines, such as technological assessments, diagnostic pathways and protocols. Examples of evaluation of the quality of guidelines will be provided, using AGREE. A brief summary of the production pattern of guidelines within the European Academy of neurology will be outlined.

WRITING A RESEARCH PROTOCOL FOR A DESCRIPTIVE EPIDEMIOLOGIC STUDY

MAURIZIO LEONE
University of Piemonte Orientale, Novara, Italy

Writing a research protocol for an epidemiological study is a very challenging task. It should not be considered as a tedious work required by the funding Agencies or academic bodies, but as a prerequisite for a good and successful epidemiological study. A carefully written protocol is the opportunity to explore any possible bias of the study, anticipate and prevent it from failure in collecting crucial information, guarantee methodological quality, evaluate feasibility and possible study impairments, lay down terms of reference for the collaborating partners, and allow for study reproducibility. Besides that, a good protocol is the basis for a good scientific paper. Here, a practical and interactive session is proposed to ensure the basis to design an appropriate research protocol. The practical aspects of writing a protocol for a descriptive epidemiologic study, including background, objectives, methods of data collection and analysis, and implementation are outlined. An overview of different sources of data for a descriptive epidemiological study will be explained, including current and ad-hoc sources: demographic data (censuses), vital registration systems (birth and death certificates), notification of infectious diseases, hospital admission/discharge archives, exemptions codes for specific diseases, drug prescriptions archive, reports of accidents at work, and reports of professional diseases, household samples, clinical data banks, and registers . Aim of the lecture is to understand the advantages and disadvantages of different types of data sources, the importance of representativeness, the importance of evaluating the quality of data (completeness, accuracy, relevance and timeliness). Special focus will be given to the health information systems and their possible uses for epidemiologic studies. Students will be asked to design a protocol, starting from their well-defined research question.

BASIC UNDERSTANDING OF A STATISTICAL TEST

JOHANNES VESTER
idv - Data Analysis and Study Planning, Germany

The coin flipping example. Null hypothesis. Basic characteristics of the P-value. The concept of hypothesis testing and statistical significance. Common traps. Typical statistical tests.

EFFECT SIZES AND CONFIDENCE INTERVALS – BASIC UNDERSTANDING OF PRINCIPLE BIOMETRIC FEATURES IN CLINICAL RESEARCH

JOHANNES VESTER
idv - Data Analysis and Study Planning, Germany

Effect Sizes and Confidence Intervals. Why confidence intervals rather than P-values? Definition and handling in superiority and non-inferiority trials. Interpretation of the most common result situations. Examples from the literature. CONSORT requirements. ICH and FDA approach.

INTERPRETING META-ANALYSES WITHIN THE FRAMEWORK OF EVIDENCE-BASED MEDICINE

JOHANNES VESTER
idv - Data Analysis and Study Planning, Germany

The role of meta-analyses within the framework of evidence-based medicine as keystones in the development of guidelines and therapy recommendations. Basic concept. How to read a forest-plot. Fixed and random effects. Measures of heterogeneity. The Grading of Recommendations Assessment, Development and Evaluation. Key points of the GRADE system: imprecision, inconsistency, publication bias. Interpreting strength of recommendations. Examples from the literature.

THE IMPORTANCE OF QUALITY ASSURANCE

JOHANNES VESTER
idv - Data Analysis and Study Planning, Germany

Modern risk-based approaches and centralized statistical monitoring as basis for high precision RCTs. Why clinical trials fail. Practical examples from interactive study conduct control revealing common traps and problems in the conduct of clinical studies. New FDA and EMA approaches to ensure successful trials.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