Postdoc position in Biostatistics – Causally Interpretable Network Meta-Analysis (CI-NMA): Fit-For-Purpose Methods For Decision Making In Health Technology Assessment

Position environment

The University Paris XII Val de Marne, currently University Paris Est Créteil (UPEC), is the largest multidisciplinary University in the Paris metropolitan area. Founded in 1970, UPEC has managed to establish itself both as a regionally grounded institution and internationally oriented university. Research at UPEC is undertaken across 23 cross-sector bodies, 34 research teams, developing multidisciplinary research. Research policy at UPEC focuses on world-leading research aiming to innovation, discovery and validation.

UR 7379 - EpiDermE (Epidemiology in Dermatology and Evaluation of Therapeutics) is a research team in pharmacoepidemiology affiliated to the UPEC Health Faculty. EpiDermE develops a research program providing evidence-based information on therapeutic assessment and therapeutic strategy (benefit-risk ratio, choice of first-line treatment, long-term drugs' efficacy and safety assessment, safety, severe cutaneous drug reactions, avoidability) in the field of immune-mediated inflammatory diseases.

Project summary

Network meta-analysis (NMA) has become a cornerstone methodology for the assessment of innovative health technologies, in the absence of direct head-to-head comparisons between the interventions of interest. It provides valuable information to prescribing physicians, regulatory agencies and payers on the relative efficacy and safety of drugs and has a crucial impact on market and patient access. This project will develop fit-for-purpose NMA methods that are flexible, bias-robust and produce causally interpretable results in specific target populations. Such methods are increasingly attractive for pharmaceutical companies, regulators and reimbursement agencies worldwide. Policy decisions are made for specific healthcare settings and require treatment effect estimates that are maximally relevant to the target population for decision-making. Within the context of health technology assessment (HTA), the landscape is being disrupted by the new European Union HTA Regulation, which demands: (1) a dramatic increase in the use of NMA due to unavailable head-to-head comparisons between all competitors; (2) considerable analytical complexity with respect to the type of NMAs being conducted; and (3) the generation of comparative effectiveness results in many different member state populations.

The aim of CI-NMA is to develop novel methods for case-mix standardization that are bias-robust and allow for causally interpretable network meta-analysis, in the context of both full access and restricted access to individual participant data (IPD). CI-NMA includes three work packages (WPs). In WP1, we will develop robust and powerful approaches for case-mix standardization under limited access to IPD, which enable the use of machine learning methods in the estimation process, reducing the dependence on modeling assumptions and potential for bias while maintaining valid inference. In

WP2, we will develop novel methods for CI-NMA under full access to IPD aiming to: (1) compare and rank different treatment options for specific target populations; and (2) quantify the importance of case-mix heterogeneity in the trial network. Finally, in WP3, we propose a new strategy to include aggregate data from trials without IPD into CI-NMA, integrating the methods developed in WP1 and WP2. Across all WPs, new methods will be evaluated by numerically simulated data, and illustrated by real data of randomized controlled trials previously conducted by the Danish multinational pharmaceutical company Novo Nordisk. Successful implementation of the project will lead to at least three publications in statistical journals acknowledged as top-tier, and presentations in key statistical conferences. The project receives full funding from Novo Nordisk, and is planned to run for three years from 2025 to 2028.

Required Skills and Qualifications

- Degree: PhD in biostatistics, data science, quantitative epidemiology or related fields.
- Good knowledge in causal inference and evidence synthesis methods, or willingness to learn.
- Proficiency in statistical software (i.e. R).
- Advanced writing and communication skills in English. Proficiency in French is an advantage.

Host Structure

University Paris Est Creteil
Faculty of Health
Team EPIDERME
8 rue du General Sarrail, Créteil 94010, France.

Supervisors

- Dr. Tat-Thang Vo. Professor (junior) in biostatistics. University Paris Est Creteil.
  Email: tat-thang.vo@u-pec.fr
- Dr. Antonio Remiro-Azocar. Statistical Methodologist. Methods and Outreach. Novo Nordisk.
  Email: AAZW@novonordisk.com
- Dr. Anders Gorst-Rasmussen. Head of Launch Evidence Generation and Orchestration. Novo Nordisk.
  Email: AGTR@novonordisk.com

Contract details

- Full-time, fixed-term contract (CDD).
- Duration: 36 months
- Salary: Based on official pay scales of University Paris Est Creteil, dependent on qualifications and experience.
- Funding for conference travel, publication costs and yearly research stays at Novo Nordisk HQ
- Working hours: Monday to Friday, 35 hours per week. Remote work: 2-3 days/week (optional).
- 3.5 days of leave per month, starting from the first month of employment.