

**Title: “Federated” data analysis methods using observational population-based cohorts to enhance randomized controlled trials data**

**Research position:** Postdoc. The duration of the contract will be determined by the candidate's background and prior experience, with a maximum duration of 24 months.

**Context:** High-quality randomized controlled trials (RCTs) have significantly advanced obstetrics and neonatal medicine, greatly improving survival rates and reducing severe complications in very preterm (VPT) births. Despite these advancements, the number of neonatal trials has been declining. This decline can largely be attributed to the increasing complexity of interventions, rising research costs, and the need for long-term follow-up in neonatal RCTs. In response, many countries have established population-based VPT birth cohorts to facilitate research into the causes and both the immediate and long-term effects of prematurity. These cohorts also evaluate the effectiveness of interventions in practical settings. The Research into European Children and Adults born Preterm project (RECAP Preterm, <https://recap-preterm.eu>) exemplifies this effort, uniting a consortium of diverse stakeholders. This project has developed a platform that integrates longitudinal data from birth through to adulthood for VPT individuals from key European VPT cohorts, encompassing 23 cohorts established between 1980 and 2012 and involving follow-up data from 19,959 children at one or more points during their childhood.

**Aim:** The goal of this research project is to enhance RCT data by incorporating real-world evidence (RWE) using data from population-based observational cohorts available on the platform. Since cohort data represent real-world data (RWD) collected from individuals in everyday settings, they are ideal for this purpose. Proper analysis of RWD can generate RWE that complements RCT findings. Techniques such as propensity score matching, inverse probability weighting, and counterfactual approaches like g-methods and doubly robust methods are employed to derive RWE and establish the causal connections between variables [1-3]. The fundamental concept involves leveraging a portion of RWD to simulate a potential RCT [4]. This approach is central to the emerging “benchmarking” trials, where the efficacy of observational analysis methods is assessed by comparing their outcomes to those of randomized trials [5]. This methodology can then be used with observational data to evaluate the external validity or transportability of trial results [6]. **In essence, inferences can be drawn either by using the RWD to enhance the results of a clinical trial, such as through meta-analysis, or by starting with an RCT and constructing a benchmarked trial using the RWD.**

**Location:** The candidate will be based in the team INSERM CIC-EC 1426, located at the Robert Debré hospital, Paris, France. The candidate will collaborate closely with members from other teams of the LIFT-UP Preterm project [7] in France and internationally. Particularly close working relationships will be established with perinatal epidemiologists in the EPOPé unit at the *Centre de Recherche en Épidémiologie et Statistiques* (CRESS, INSERM U1153)

**Requirements:**

Essential: PhD in biostatistics, clinical epidemiology or mathematics; experience and proficiency in R programming; English language writing and presentation skills; excellent collaborative working practices (including use of online communications tools).

**Desirable:** Knowledge of DataSHIELD (<https://www.datashield.org>), an open-source software (based on the R language) that will be used to access data on the RECAP Preterm Platform; knowledge of git version control system; understanding of perinatal medicine terminology; French language skills.

**Deadline for application:** The application is available immediately and will remain open until a suitable candidate is selected.

**Start date:** Between September and October 2024.

**Salary:** Postdoctoral level; INSERM salary scale.

**Contacts:** For any further questions or clarifications, please contact Dr. Moreno Ursino ([moreno.ursino@inserm.fr](mailto:moreno.ursino@inserm.fr)) and Dr. Andrei Morgan ([andrei.morgan@inserm.fr](mailto:andrei.morgan@inserm.fr))

**How to apply:** To apply, please send your CV and cover letter to Dr. Moreno Ursino ([moreno.ursino@inserm.fr](mailto:moreno.ursino@inserm.fr)), Pr. Corinne Alberti ([corinne.alberti@inserm.fr](mailto:corinne.alberti@inserm.fr)), and Dr. Andrei Morgan ([andrei.morgan@inserm.fr](mailto:andrei.morgan@inserm.fr))

## **Bibliography**

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- [6] Hutcheon JA, Liauw J. Improving the external validity of Antenatal Late Preterm Steroids trial findings. Paediatric and perinatal epidemiology. Jan 4 2022.
- [7] Morgan AS, Cambonie G, Durox M, et al, Long term Follow-up after Trials Using a European Platform of Preterm birth cohorts: LIFT-UP Preterm. <https://doi.org/10.13140/RG.2.2.33845.04324>