Postdoctoral research position:
AI and clinical prediction in respiratory infections

Title of the position: Postdoctoral Researcher / Data Scientist

Department: CERP (Center of Excellence in Respiratory Pathogens) and Laboratoire Commun de Recherche / bioMérieux, Hôpital Edouard Herriot

Location: Lyon, France (Hospices Civils de Lyon & bioMérieux)

Duration: 18 months

Start Date: November 1, 2025

POSITION OVERVIEW

We invite applications for a post-doctoral research position in the AIRISE project, focusing on the development of real-time prediction algorithms for clinical worsening in patients with lower respiratory tract infections. This is an exciting opportunity to apply cutting-edge machine learning methods to a major public health challenge, with direct implications for patient for patient care in hospitals.

The successful candidate will join a dynamic interdisciplinary team of clinicians, epidemiologists, and data scientists, contributing to the design and implementation of AI-based solutions that can improve early detection of patient deterioration and guide clinical decision-making.

PROJECT CONTEXT

AIRISE is a collaborative project involving:

- Lyon University Hospital (Hospices Civils de Lyon (HCL))
- bioMérieux,
- Center of Excellence in Respiratory Pathogens (CERP, https://cerp-epi.com)) as part of the Centre International de Recherche en Infectiologie (CIRI)

Using the HCL Data Warehouse (EDS), the project investigates acute lower respiratory tract infections - leading cause of hospital admissions worldwide. These infections, caused by bacteria or viruses, can occur in the community or in hospitals and require rapid and appropriate management. Some patients may show signs of deterioration that increase the risk of admission to intensive care, with potentially serious consequences for their prognosis, quality of life, and hospital costs.

The role of the postdoctoral researcher is to develop AI models capable of identifying these signs of deterioration as early as possible, leveraging patients' clinical and biological data, as well as their temporal evolution. The ultimate goal is to build a real-time prediction system to support clinicians in optimizing patient management.

KEY RESPONSABILITIES

- Manage and ensure the quality of data extracted from HCL EDS.
- Perform descriptive statistics, including risk factor analysis and survival models.
- Design, develop and test AI algorithms to handle specific data characteristics (sparse and time series) and predict real-time risk of worsening. Build interpretable models providing transparent explanations on risk assessments.

- Work as an integral member of a multidisciplinary data science team, collaborating closely on data management, statistical analyses, and AI development.
- Work in close collaboration with clinicians to adjust and validate predictive models.
- Write scientific papers and technical reports.
- Present the findings at national and international congresses.

QUALIFICATIONS

Required:

- Ph.D. in Data Science, Computer Science, Biostatistics, or a related field
- Proficiency in machine learning/AI and data analysis
- Experience with R and/or Python
- Excellent written and oral communication and interpersonal skills
- Strong analytical and problem-solving abilities
- Curiosity and a proactive attitude toward research and innovation
- Fluency in French and English

Preferred:

- Experience in clinical data analysis or healthcare domain
- Familiarity with Electronic Health Records (EHR) systems and data
- Proven track record of publishing in peer-reviewed journals
- Strong interpersonal skills and the ability to work effectively in a team-oriented, interdisciplinary environment

APPLICATION PROCESS

Interested candidates should submit the following documents:

- CV
- Cover letter
- Contact details of references

Please send your application directly to:

- Dr. Cédric Dananché (cedric.dananche@chu-lyon.fr)
- Pr. Marta Nunes (marta.nunes@chu-lyon.fr)
- Dr. Maxime Bodinier (maxime.bodinier@biomerieux.com)

Application deadline: September 30, 2025
Affiliation: Hospices Civils de Lyon (HCL)
Start Date: November 1, 2025

AFFILIATION AND WORK ENVIRONMENT

The postdoctoral researcher will be affiliated with Hospices Civils de Lyon (HCL) and based at:

- Center of Excellence in Respiratory Pathogens (CERP), Université Claude Bernard Lyon 1, Site Laënnec, 69008 Lyon
- Laboratoire Commun de Recherche / bioMérieux, Hôpital Edouard Herriot, 69003 Lyon