Project title	Biomarker-centred clinical prediction modelling of asthma attacks in pediatric asthma		
Study level(s)	☐ MSc	☒ PhD	☐ Postdoctorate
Principal investigator(s)	Francine M. Ducharme and Simon Couillard		
Project duration	3-4 years		
Start date	As soon as possible		

Date of posting: 2023-08-29

Student position
Funded PhD position in clinical epidemiology applied to paediatric asthma.

Place of work
CHU Sainte-Justine Research Center
3175, ch. Cote-Ste-Catherine
Montreal (Quebec) H3T 1C5

Research laboratory presentation
Dr. Ducharme's clinical laboratory focuses on various clinical studies aimed at validating new prognostic approaches in paediatric asthma to improve asthma management and introduce it into clinical practice. Dr. Couillard is an expert in the development of a clinical prediction model of inflammatory markers in adolescent/adult asthma.

Research project description
Asthma is the most common chronic disease in children. However, even today, the evaluation of the risk of deterioration and the choice of treatment are based on average group responses and not on individual characteristics. Given the risk-benefit of different anti-inflammatory treatments, a risk stratification based on characteristics and clinically accessible biomarkers could better guide therapeutic choices in the context of personalized (precision) medicine. We speculate that, as in adults, stratification based on the type and extent of inflammation would be a major advance in asthmatic children who are at greater risk of suffering side effects from medications.

Goals
The main objective of the research program is to (i) develop and (ii) validate a clinical prediction model based on individual patient data to predict the occurrence of asthma attacks in the following year and (iii) to make this tool available as a web application. This model and application will empower health professionals to integrate this information for therapeutic adjustment in a personalised manner.

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Université de Montréal

Role of the trainee in the project

- Identify randomized clinical trials (RCTs) that have documented clinical characteristics and inflammatory biomarkers at study entry as well as targeted clinical outcomes (exacerbations, control, lung function) documented prospectively in the following 6 to 12 months ;
- Develop a systematic review and meta-analysis protocol with individual data in the control groups of the various RCTs in children aged 1 to 17 with mild, moderate or severe asthma;
- Develop and validate a clinical prediction model based on individual data to predict the occurrence of asthma attacks in the following year;
- Transpose this clinical prediction model in the form of an application-type tool available at the patient's bedside.

Required training and profile

- Hold an M.Sc. in biostatistics, epidemiology or MD with training in biostatistics, epidemiology, or related sciences.
- Excellent research skills
- Familiarity with R and/or SAS software is an asset
- Experience in database manipulation is an asset
- Have an interest in asthma treatment and knowledge transfer
- Excellent academic record
- Excellent command of English, written and oral, and ideally French.

Conditions

A research grant, reserved for this project, will cover the first two years; the candidate will be invited to apply for training grants to various competitions and programs.

Submit your application

Applicants must send the required documents to Dr. Francine M. Ducharme and Dr. Couillard by email at francine.m.ducharme@umontreal.ca and s.couillard@usherbrooke.ca

Please provide:

√ *Curriculum vitæ*
√ Most recent transcripts
√ Cover letter
√ Reference letter

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About the CHU Sainte-Justine Research Center

CHU Sainte-Justine Research Center is a leading mother-child research institution affiliated with Université de Montréal. It brings together more than 200 research investigators, including over 90 clinician-scientists, as well as 500 graduate and postgraduate students focused on finding innovative prevention means, faster and less invasive treatments, as well as personalized approaches to medicine. The Center is part of CHU Sainte-Justine, which is the largest mother-child center in Canada and the second most important pediatric center in North America. More on research.chusj.org

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