Project title	Impact of vitamin D3 supplementation on viral infections, metabolome, and bone turnover in preschool children
Study level(s)	☐ MSc ☒ PhD ☐ Postdoctorate
Principal investigator(s)	Francine M. Ducharme, M.D. , M.Sc. , FRCPC
Research axis	Infectious Diseases and Acute Care
Project duration	3-4 years
Start date	As soon as possible

Date of posting: 2024-05-02

Research laboratory presentation

The clinical laboratory of Dr. Ducharme, clinician-scientist and clinical epidemiologist, focuses on various clinical studies testing the effectiveness and safety profile of various interventions in pediatric asthma.

Research project description

Funded PhD position in clinical epidemiology or related sciences applied to paediatric asthma.

Asthma is the most common chronic disease in children and a viral infection is the main factor triggering an asthma attack in young children. Despite standard treatment, young children continue to have asthma attacks triggered by colds.

The proposed research program is derived from a large multicenter clinical trial testing the effectiveness of high doses of vitamin D versus a placebo in addition to standard treatment to reduce the severity of asthma attacks in young preschool children with asthma attacks requiring oral corticosteroids in the last year. During the study, we collected blood, periodic urine, and nasal samples during each cold/asthma attack to examine the impact of high doses of vitamin D on viral infections, serum metabolome and nasal and on bone remodeling biomarkers. With over 320 recruited patients, the last follow-up is planned in December 2024.

Goals:
The three main objectives of the research internship are to examine whether vitamin D supplementation:
- Differentially affects the distribution of respiratory viruses in general and reduces the viral load specifically of the three most frequently identified viruses (rhino/enterovirus, respiratory syncytial virus, and adenovirus) compared to placebo; and secondarily, whether any impact on distribution and viral load is associated with milder asthma attacks.
- Affects the safety profile with respect to bone metabolism biomarkers such as osteocalcin and telopeptides.
- Affects the nasal metabolome during viral infections and the serum metabolome at the end of treatment.

Role of the trainee in the project:
The role of the student will be to review and master the literature on the three topics of interest; take charge of data management, analysis and interpretation of results using R software; present the results to scientific conferences; and write a dissertation with 3 manuscripts, which will be submitted for publication.

Required training and profile
- Hold an M.Sc. in biostatistics, epidemiology, pharmacoepidemiology or MD with training in biostatistics, epidemiology, or related sciences.
- Excellent knowledge of programming statistical software (SAS, SPSS or R) is an asset.
- Expertise in statistical analyses and/or mathematics
- Excellent research skills including presentation and publications.
- Experience in database manipulation is an asset.
- 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
Candidates must send the required documents Dr. Francine M. Ducharme by email at
francine.m.ducharme@umontreal.ca

Please provide:

√ *Curriculum vitæ*

√ Most recent transcripts

√ Cover letter

√ References

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CHU Sainte-Justine Research Center is a leading mother-child research institution affiliated with Université de Montréal. It brings together more than 300 research investigators, including over 120 clinician-scientists, as well as 580 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