

The kids are alright—but not older people

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Why does COVID-19 affect older people more than young children? Why are the symptoms more severe in seniors than in toddlers? What are the cellular mechanisms that explain how the infection progresses?

These are questions that three Université de Montréal professors will try

to answer as part of a major international clinical study led by colleagues at the University of British Columbia.

In response to the SARS-CoV-2 pandemic, the World Health Organization has asked scientific communities around the world to study the epidemiology of COVID-19 in order to develop a coordinated plan for treating the disease.

"While the experience of China and Italy is helping us to deal with this crisis, many questions remain," said Jean-Sébastien Joyal, an intensive-care specialist at the CHU Sainte-Justine children's hospital in Montreal.

"Among other things, why is the disease so serious in some people, while many remain asymptomatic?"

Looking at hospitalized patients

With Philippe Jouvét, also an intensive-care specialist at CHU Sainte-Justine and director of the Quebec Respiratory Network, and Hugo Soudeyns, director of the Department of Microbiology, Infectiology and Immunology at UdeM, Joyal is contributing to a large observational study of patients hospitalized in Canada after a diagnosis of COVID-19.

The study, which aims to understand what protects children from the disease and thereby guide treatment in adults who are most affected, involves a global clinical trial to test the antiviral agents lopinavir and ritonavir against the [coronavirus](#). The study will collect bronchoalveolar secretions and [white blood cells](#) from adults and children with COVID-19 to [answer questions](#) posed by Joyal's team.

"We will use the samples to compare transcriptomes from individual cells of adults and children affected by COVID-19," said Joyal. "These data will allow us to better understand which immune cells diverge in

their response to the virus and at what point in the disease. We hope to find a more precise target to reduce the severity of the disease in older people."

Joyal's work is a sub-study of a research project led by Srinivas Murthy, a pediatrics specialist at the University of British Columbia who was involved in work on an Ebola fever outbreak a few years ago in sub-Saharan Africa.

Only a week to design

Calling themselves the Canadian Critical Care Trial Group, the group of Canadian critical-care researchers and clinicians took only one week to design the study under Dr. Murthy's leadership. The group had been involved in research to contain the last SARS outbreaks in 2003 and the H1N1 flu outbreak in 2009, and "had a research infrastructure in place that we got back up and running for COVID-19," explained Joyal.

The project has very specific objectives, including:

- characterizing the progression of the disease in Canada;
- monitoring the effect of antiretrovirals (including lopinavir and ritonavir) in affected patients;
- reviewing the perspectives of intensivists in the field;
- establishing guidelines for understanding the [disease](#).

"This last objective is important," said Joyal, "because scientific consensus will have to be reached based on the results of the many studies currently being conducted on COVID-19."

Provided by University of Montreal

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