

# McGill & Institut nordique du Québec Northern Research Chair in Respiratory Health & Health Services

## Annual Report: 2022-2023

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Photo: Claire Élise Burdet



## **Northern Research Chair in Respiratory Health & Health Services Annual Report 2022-2023**

### **OVERVIEW**

Chairholder: Faiz Ahmad Khan

Dr. Ahmad Khan is a clinician-scientist. He is an Associate Professor in the Department of Medicine of McGill University and a Scientist at the Research Institute of the McGill University Health Centre. He is a member of the Respiratory Division of the McGill University Health Centre in Montreal where he practices as a respirologist and is medical director of the tuberculosis (TB) clinic. The McGill University Health Centre is the corridor of service for out-of-region medical services for the population of Nunavik, the Inuit homeland within the province of Quebec. In addition to seeing Nunavimmiut patients in Montreal, since 2013, Dr. Ahmad Khan is the respirologist providing clinical services within Nunavik. He also provides programmatic and policy guidance on TB to the Nunavik Regional Board of Health & Social Services. In June 2022, Dr Ahmad Khan was selected through an internal competition as the McGill-INQ Chair in Northern Research.



The Chair's clinical and policy work in Nunavik provide insight into the challenges Nunavimmiut face when seeking medical care, as well as into the structural barriers that undermine the healthcare system's capacity to meet patients' needs. His clinical and policy work in Nunavik have shaped a health research program focused on Nunavimmiut patient and community priorities and grounded in partnerships with community members and Inuit health leadership. The research program strives to uphold and be consistent with the reclamation of rights, identities, lands, and autonomy by the Indigenous peoples of Canada and Quebec.

### **Puvaqatsianirmut — The Committee for Healthy Lungs**

Puvaqatsianirmut a committee comprised of Nunavik Inuit, governs and oversees the Chair's Inuit health focused research program. The committee members represent Nunavik's three coasts. All four research teams seek guidance from Puvaqatsianirmut and defer to its preferences at all research levels: hiring (including remuneration levels), participant recruitment, ethical issues (including consent), research methods, and data analysis, reporting, management, and ownership.

### **Objectives**

The Chair concentrates on two core objectives:

- 1) enhance the capacity and effectiveness of Nunavik's health and housing services to strengthen

and protect lung health by studying novel, evidence-based, multidisciplinary interventions that address biomedical and social determinants of lung health;

2) partner with the Indigenous health research community, Quebec's northern Indigenous health authorities and community representatives, to develop a common approach for the design and execution of studies that will simultaneously facilitate undertaking Indigenous health research while ensuring rigour in ethical study conduct, and Indigenous-partnering and co-ownership of research. These consolidated objectives inform the research program outlined below.

## Research Program

The research team has been given the name of Puvallunirmut Tukisigiavik. The core research program consists of four interdisciplinary projects. First, *Community Health Workers for TB Prevention & Care Services in Nunavik* (funding: Canadian Institutes of Health Research, CIHR) is undertaken in partnership with the Nunavik Regional Board of Health and Social Services (NRBHSS) and specific Nunavik communities and Wellness Committees. Glenda Sandy, based at the NRBHSS, is leading this study together with the Chair. The project aims to co-construct roles and training for Nunavimmiut community members to participate in the provision of TB care services in Nunavik in a role that is referred to in other places as Community Health Workers (CHW). The impact is to increase Nunavimmiut participation in, and thereby the effectiveness of, key TB elimination interventions (screening, preventive treatment, early diagnosis).



Team members in Nunavik. Photo courtesy: D. Tooktoo



Inuit & First Nations researchers leading work in Nunavik. Photo courtesy: B. Geboe

The team has visited five Nunavik communities interviewing over 100 participants to understand experiences and concerns surrounding TB. These visits were led by our Indigenous team members, and undertaken in partnership and with support of community leaders and Wellness Committees. In parallel, interviews have been undertaken with healthcare workers who participated in TB clinical care within Nunavik. Initial analyses have been presented and verified with Puvagatsianirmut, and in radio presentations in our partner communities. The results will inform recommendations for TB-related health services and policies, and are directly informing the roles that community members should play within TB prevention and care delivery.

Second, *Artificial Intelligence-based Chest X-ray Analysis & TB Elimination in Nunavik* (CIHR), uses existing chest x-rays (CXR) and clinical data from Nunavik to estimate the accuracy of computer-aided detection (CAD) technology. CAD was recently approved by the World Health Organization as a means of analyzing CXR for tuberculosis in settings where rapid access to radiologists is not available. It also investigates the economic implications for the healthcare

system if CAD use replaces the status quo of TB screening and diagnosis without on-site radiologists.

Third, *Community-partnered infectious disease modeling to inform Covid-19 policies and advocacy in Nunavik* (CIHR) works with local collaborators and the NRBHSS to integrate community-based participatory research approaches to develop and apply mathematical models to help plan healthcare utilization. The focus of the modelling activities have shifted in response to community and NRBHSS needs towards tuberculosis, a disease whose rates have been rising in the last two years in Nunavik.



A view in Kuujjuaq. Photo courtesy: C.É. Burdet

Fourth, *Resilient Responses to Protect Lung Health in Nunavik* ([CINUK funding program](#)) is a three-faceted study in response to community interests and the needs of the health and housing authority to address challenges to lung health that are likely to be exacerbated due to climate change. Nunavik-based organization partners include Kativik Municipal Housing Bureau and Ungava Tulattavik Health Centre. In conceiving the project, the Chair brought together a multidisciplinary and international team of experts to assess mould and building/construction level predictors of mould in the housing stock, respiratory health, and infectious diseases. At the

Ungava Tulattavik Health Centre, the team will be working with individuals and families affected by lung conditions to outline a vision for a Community Lung Health Program in which community members are involved in the design and delivery of prevention and care interventions that address both biomedical and social determinants of lung health.



Salluit

## **Research team — Puvallunirmut Tukisigiavik**

Team co-lead  
*Glenda Sandy*

Community researchers  
*Daphne Tooktoo*

*Sophie Tukalak*

*Natasha MacDonald*

Post-doctoral trainees  
*Ben Geboe*

*Stephanie Law*

Graduate students  
*Coralie Geric*

Research Coordinator  
*Haidee Smith-Lefebvre*

## **Research in service of clinical care strengthening**



The hospital in Puvirnituk. Photo : F. Ahmad Khan

In the Chair's program, research is leveraged as a tool to generate knowledge that can have a tangible impact towards improving health care services and results for Nunavimmiut, critically under guidance and in partnership with Nunavimmiut. To illustrate, the Chair recently led a study on lung cancer in Nunavik. Inuit in Canada have been reported to have amongst the highest rate of lung cancer in the world, yet there are no studies to assess whether they experience disparities in outcomes. Hence the focus of the research was to determine if Nunavimmiut experience disparities in lung cancer outcomes as compared to patients from Montreal. The findings of the research were contextualized in partnership with Puvaaqatsianirmut and have been presented to

the NRBHSS Board of Directors. The results underscored the need for designing lung cancer screening pathways that will be accessible and acceptable to Nunavimmiut. With funds from INQ, the Chair is now pursuing the development of such pathways with colleagues with expertise in lung cancer screening, and community partners.

Additionally, Puvallunirmut Tukisigiavik practice this factor whenever they present to the Nunavik Regional Board of Health and Social Services, the Board of Directors of Nunavik's health establishments, or local Wellness Committees. These presentations range from introducing a study to collaborating with the Board to develop curriculum or to address TB in the region. In these instances, some Nunavik villages have invited Puvallunirmut Tukisigiavik to come and interview community members motivated to offer ideas about managing a TB outbreak and caring for those infected with the respiratory disease.

### **Equity, Diversity and Inclusion**

As an advocate of equity, diversity and inclusion (EDI), the Chair upholds the respectful integration of EDI in both research and work environments. The four projects increase the presence of Inuit community and health authority representation in the design and conduct of research. Equity and sovereignty-seeking groups are well-represented on the research team.

### **Outreach activities**

- **Inuulitsivik Health Centre Board of Directors Meeting** (Puvirnituaq, virtual attendance) — June 2022. The Chair and team members presented research studies, soliciting guidance, feedback and support from Inuit health leadership.
- **Puvaqatsianirmut** (virtual meeting) — September 2022. Meeting with Inuit community representatives to discuss lung health research processes.
- **Akulivik Community Radio Call-In** — September 2022. Our team hosted a call in show to share research results and engage in discussions with community members.
- **TB Scientific Committee** (Montreal, in person) — October 2022.
- **Nunavik TB Regional Committee Meeting** (Kuujuuaq, virtual attendance) — November 2022. The Chair and team members updated Nunavik Inuit leaders and the public health department on on-going partnered research projects addressing TB
- **Puvaqatsianirmut** (virtual meeting) — September 2022. Meeting with Inuit community representatives to discuss lung health research processes.
- **Puvaqatsianirmut** (virtual meeting) — February 2023. Meeting with Inuit community representatives to discuss lung health research processes.
- **Presentation to the Centre for Outcomes & Research Evaluation, Research Institute of the McGill University Health Centre** (Montreal, with live stream) — March 2023. Community-partnered lung health research in Nunavik
- **Activité brise-glace** (Montreal, in person) — March 2023. To this INQ-organized event, the Chair led the invitation and hosting of Indigenous representatives with researchers of the INQ's Montreal-Sherbrooke hub. This intervention supported the institution's vision to advance Indigenous self-determination over research. During the event, Indigenous participants contributed to discussions about INQ's Science Program. They self-identified as Nunatsiavut and Nunavik Inuit, Listuguj Mi'gmaq, Treaty 6 Cree-Métis, and Kahnawà:ke Mohawk.

- **Presentation to Nunavik Health Surveys Committee** (Kuujjuaq, virtual attendance) — April 2023. Two research projects were discussed to solicit feedback and support from this committee that oversees use of *Qanuilirpita* 2017 data for research.
- **Ungava Tulattavik Health Centre Board of Directors Meeting** (Kuujjuaq, in person)— April 2023. The Chair and team members presented research studies, soliciting guidance, feedback and support from Inuit health leadership.
- **Salluit Community Radio Call-in show on Tuberculosis** (Salluit, in person) — April 2023. The Chair went on the community radio with local clinicians and Elder Eva Quananack to answer questions from the community about tuberculosis.
- **Meeting with Wellness Committee, Mayor, clinicians & Puvallunirmut Tukisigiavik team members in Salluit** (in person)— April 2023. Intervention and research planning and discussions.
- **Presentation on Tuberculosis for Nunavik Clinicians** (Kuujjuaq with livestreaming across Nunavik) — May 2023.
- **Meeting with the President of the Collège des Médecins du Québec** (Kuujjuaq, in person) — May 2023. The Chair met with Dr. Maurice Gaudrault during the latter's visit to Nunavik, during which the Chair provided insights into intersections between respiratory medical practice and health research in Nunavik.
- **Meeting with Larry Watt, Executive Director of the Ungava Tulattavik Health Centre, & Nathalie Boulanger, Director of Professional Services of the Ungava Tulattavik Health Centre** (Kuujjuaq, in person) — May 2023. Planning of research activities on lung health services.
- **Nunavik TB Scientific Committee** (attended from Kuujjuaq) — May 2023. Participation as clinical and research advisor, with Puvallunirmut Tukisigiavik team member Sophie Tukalak.
- **Organization and moderation of presentation on Childhood Tuberculosis by pediatric TB specialist Else Bijke of Oxford University** (Kuujjuaq with livestreaming across Nunavik)— June 2023.
- **McGill Medical Students – Physician Case Studies on Indigenous health** (Montreal, in person) — June 2023. Introducing medical students to concepts of cultural safety in health care and the importance of understanding impacts of prior and on-going colonialism, and of critical self-reflection and humility, in the context of respiratory healthcare provision in Nunavik.

#### **Research Areas:**

- Lung Health
  - Tuberculosis
  - Chronic Respiratory Disease
  - Severe Acute Respiratory Tract Infection
  - Lung cancer
- Public health
- Epidemiology
- Artificial intelligence use in medicine
- Diagnostic accuracy & services
- Mathematical modeling of infectious diseases

- Impact of climate change on health
- Community-partnered research

### **Funding**

- Canadian Institutes of Health Research
- Fonds de recherche du Québec – Santé
- Fonds de recherche du Québec – Nature et technologie
- Institut Nordique du Québec
- National Research Council of Canada
- McGill Interdisciplinary Initiative in Infection & Immunity (MI4)
- Rossy Cancer Network

### **Network**

- Nunavik Regional Board of Health and Social Services
- Ungava Tulattavik Health Centre
- Inuulitsivik Health Centre
- Physicians in Nunavik
- Nunavik TB Scientific Committee
- Kativik Municipal Housing Bureau
- Wellness Committees of three villages

### **Research Sites**

- Kuujjuaraapik
- Akulivik
- Salluit
- Kangiqsujuaq
- Kuujjuaq
- Kangiqsualujjuaq
- Montreal

### **Collaborating institutions**

- Université de Laval
- Université de Montréal
- Institut universitaire de cardiologie et de pneumologie de Québec
- National Research Council of Canada
- United College London
- Oxford University
- Department of Family Medicine, McGill University
- Department of Radiology, McGill University
- l'Observatoire international sur les impacts sociétaux de l'IA et du numérique