Canadian Population Screening for Risk of Type 1 Diabetes Research Consortium

CanScreen T1D

Establishment of Research Consortium

- Funding opportunity from Canadian Institutes of Health Research and JDRF
  - Create a national research consortium to examine the acceptability and feasibility of general population screening in Canadian children and to implement a pilot study

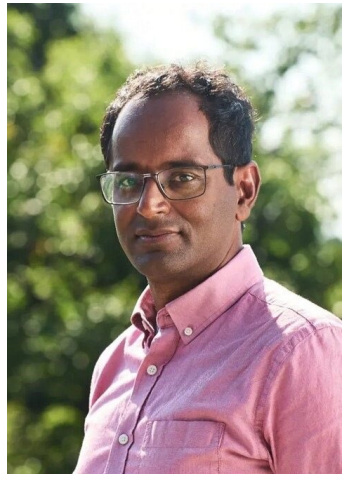
CanScreen T1D Consortium

Consortium Members

- Leadership – Diane Wherrett, Robin Hayeems, Peter Senior, Ashish Marwaha, Holly Witteman, Pranesh Chakraborty
- Theme Leads
- Project Leads
- Early Career Investigators
- Cross Cutting Theme Leads
- PWLE/Advisory Panel
- International Advisory Panel



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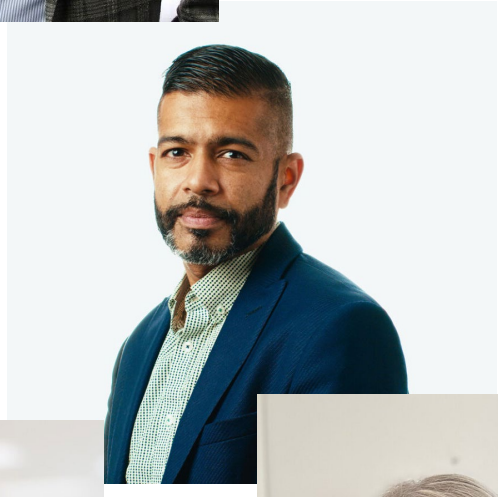
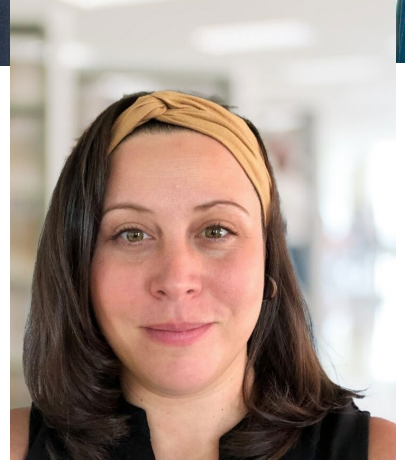





Acceptability Theme Projects

Citizen Engagement

(Hayeems, Witteman, L'Esperance)

Indigenous Engagement

(Delorme, McGavock, Witteman, Diabetes Action Canada Indigenous Patient Circle)

Patient Decision Aid

(Witteman, Pow, Delorme, Senior, Hayeems, Marwaha)

Core Outcome Set

(Hayeems, Chakraborty)

Citizen Engagement

Aim

- Determine acceptability of population based T1D screening for citizens, families, clinicians and other stakeholders to inform development, implementation, and evaluation of a T1D screening pilot study

- Methods
  - Citizen engagement: Panel discussions informed by evidence briefs
  - Stakeholder dialogue with experts

Indigenous Engagement

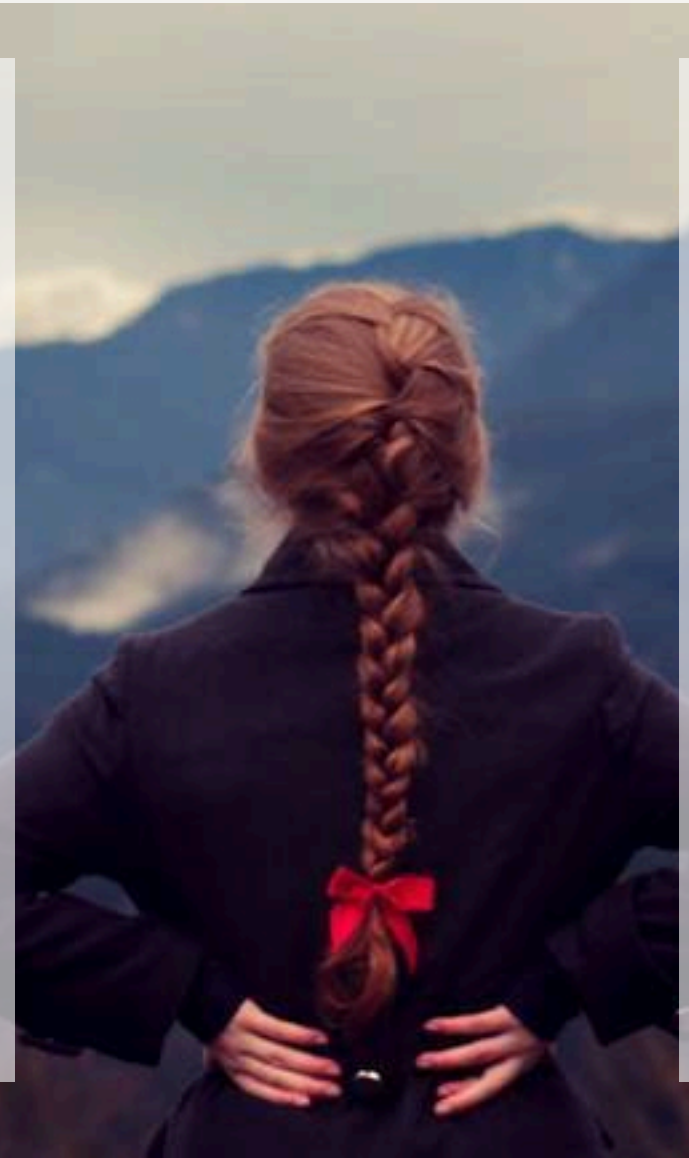
- Aims
  - Expand existing relationships between the consortium and Indigenous communities involved in pediatric diabetes research in Canada
  - Host meetings with leaders and youth from indigenous communities, to share knowledge from our team and determine their priorities for T1D screening and prevention
  - Formalize plans regarding T1D screening with people from Indigenous communities, nations, and organizations

Patient Decision Aids for Screening, Follow-Up, and Enrolment in Trials

Aims: Co-design, optimize, and evaluate 3 web-based patient decision aids

Patient decision aids support shared decision making by:

- making decisions explicit
- explaining benefits & harms
- helping clarify values, goals & preferences



1) whether or not to have child screened

↓ *options depend on screening results*

2) which follow-up strategy to pursue

↓ *options depend on follow-up results*

3) whether or not to enrol child in a trial, which trial(s) to choose

Core Outcome Set

- Aims
  - Identify outcomes measured in recent T1D screening studies
  - Identify additional outcomes important to families with T1D, parents in the general population, and health care providers with expertise in T1D
  - Achieve consensus across stakeholders on a COS
  - Identify and recommend measurement instruments used for each outcome in the COS

Feasibility Theme Projects

- Canadian Clinical Autoantibody Lab
  - (Tsui, Senior, Pangiotopoulos, Rosolowsky, Marwaha, Chakraborty, Wherrett)

- Creation of a Canadian T1D Genetic Data Repository to Validate a T1D Genetic Risk Score
  - (Manousaki, Marwaha, Polychronakos, Makri, Paterson, Panagiotopoulos, Oram, Huang, Rosolowsky, Rabasa-Lhoret, Dupuis)

Establishment of National Autoantibody Clinical Laboratory

Aims:

- To evaluate screening and confirmatory T1D autoantibody assays for pilot study and suitable for publicly funded clinical laboratory in Canada
- To assess the suitable collection method for the chosen autoantibody assays in Canadian context

Creation of a Canadian T1D Genetic Data Repository to Validate a T1D Genetic Risk Score

Aims:

- Create a repository of genetic data for Canadian T1D population from different ancestries
  - Assemble existing Canadian T1D case collections, pairing them to Canadian ancestrally-matched controls
- Test GRS2 and validate a trans-ethnic T1D GRS in Canadian T1D case-control cohorts of South Asian, East Asian, African ancestries.
- Best performing score will be used in the Canadian Screening Program Pilot Study

Follow Up and Monitoring Theme Projects

- Establishing an Integrated Network for Clinical Follow Up and Intervention Trials in Canada
  - (Senior, Wherrett, Marwaha, Dutz)
- Genetic Counseling and Education Materials for GRS/Ab Screen Positive Individuals
  - (Marwaha, Hayeems, L'Espérance, Chakraborty, Witteman, Dupuis)
- Metabolic Monitoring
  - (Wherrett, Taleb, Verchere, Witteman)

Establishing an Integrated Network for Clinical Follow Up and Intervention Trials in Canada

- Aims
  - Establish a national network of clinicians with expertise in T1D care which will be linked with regional research centres.
  - Increase awareness among clinicians of the benefits of screening for T1D risk and potential therapies being developed for early stages of T1D
  - Facilitate follow-up and metabolic monitoring of individuals at high T1D risk in their home province
  - Grow capacity to recruit to intervention studies by leveraging and integrating complementary skills of clinicians

Genetic Counseling and Education Materials for GRS/Ab Positive Individuals

- Genetic counselor will develop a webinar designed to be delivered to participants virtually to do post-test genetic counseling for a ‘high risk’ T1D Genetic Risk Score and Ab+
  - Webinar will be delivered to participants who screen positive in the CanScreen T1D pilot and feedback will be obtained
  - Information will be incorporated into patient decision aids
  - Accommodations will be made for participants who do not have English as a first language

Metabolic Monitoring Aims

- To provide follow up metabolic monitoring to children ≥ 2 Ab identified in the pilot screening program
- To identify and connect interested individuals to ongoing and future clinical trials
- To incorporate the values and preferences identified through the Acceptability projects into the design of follow up plans
- To assess feasibility of home-based monitoring options.
- To assess the beta cell prohormones proinsulin and proIAPP as novel biomarkers of T1D prediction

Pilot Study

- Based on results of acceptability and feasibility projects, we will design and run a pilot study, proposed as
  - GRS arm: population screening in infancy offered at time of newborn screening for genetic risk with enrollment of at-risk infants in ongoing Ab surveillance
  - Ab arm: population screening at 2, 5 and 10 years of age for diabetes-related Ab with enrollment of those with Ab in ongoing surveillance
  - Follow up for those with Ab

CanScreen T1D Features

- Broad participant and stakeholder input from early stages
- National screening strategy in a setting of 13 health care systems
- Integration with newborn screening
- Assessment and use of GRS in multi-ethnic cohort
- Indigenous led project
- Inclusion of genetic counseling
- Creation of national resources
- Exploration of novel biomarkers
- Team with wide range of expertise and experience