Networking for research: a human biomonitoring project in Dehcho and Sahtú Regions of the Northwest Territories

Mylène Ratelle and Brian D. Laird
School of Public Health and Health Systems, University of Waterloo, Waterloo, ON, Canada

INTRODUCTION

The Dehcho and Sahtú First Nations are located in the Northwest Territories (NWT). Country foods, which have been associated with lower risk factors for cardiovascular disease and diabetes, are integral to the health and food security of First Nations communities in Northwest Territories [1]. However, concerns regarding contaminants such as mercury and cadmium in fish and moose meat, have led to a series of contaminant advisories in the Dehcho and Sahtú regions of the Northwest Territories. Therefore, the development of public health strategies related to contaminant exposures from country foods in the Northwest Territories need to strike a balance between risks and benefits [2]. Additional information regarding actual levels of contaminant exposure among First Nations individuals and communities is required. This can be best obtained through biomonitoring, which refers to the measurement of contaminant levels in human tissues Fluids, whereby characterizing exposure in a way that accounts for dietary patterns and inter-individual toxicokinetics differences [3]. The project will use a risk-benefit approach to promote country food in order to improve nutrition and food security while lessening contaminant exposure among First Nations communities.

To succeed in this project, we have to:

- Build a useful and rigorous scientific study
- Design a project respectful for the Communities and individuals
- Generate interest for the project in communities (authorities and members)
- Contextualize the results (traditional values and behavior, food pattern)
- Translate results to community-level in a relevant way for First Nations
- Create public health messaging strategy efficient for communities

The acknowledgment of cultural and contextual factors, were elements proven to be useful in conducting effective community-based environmental health projects and lasting interventions [4]. Therefore, networking is essential to a project realization such as a biomonitoring study in First Nations Communities. Many organizations should be involved and here are who is currently involved and how they interact with other organizations.

This Northern Contaminant Program (NCP) supported biomonitoring project is divided into four components:

1) Strengthening partnerships and community consultations;
2) Biomonitoring implementation;
3) Returning results to individual participants, comparing exposures to selected risk assessment guidelines;
4) Drafting public health messaging in collaboration with community groups, local governments and stakeholders.

Biomonitoring implementation includes:

1) Recruiting every interested participant 6 years of age and older;
2) Documenting the food pattern by a 24-hour recall and a Food Frequency Questionnaire (FFQ);
3) Sampling of blood, urine and hair specimens;
4) Analysing:
   - Metals: Al, As, Be, Cd, Co, Cr, Cu, Fluoride, Fe, Hg, I, Mg, Mn, Mo, Ni, Pb, Pd, Pt, Sb, Se, Sn, Ti, V, Zn;
   - Fatty acid composition;
   - Organic pollutants (i.e. POPs).

ORGANIZATIONS INVOLVED IN THE PROJECT

University of Waterloo Ethics Committee (1)
Stanton Ethics Committee (2)
Aurora Research Institute (2)
Northern Contaminant Program: For First Nations study
Health Canada: Chemical surveillance - Health advising advisor
Université de Montréal: Analytical advisor

Human biomonitoring project

DISCUSSION AND CONCLUSION

- Many organizations are involved, such as local Research Organizations, Community leaders, Ethics Committees, Scientific Advisors and Health Authorities.
- For the Dehcho and Sahtú First Nations project, our main partners are Community Chiefs, ARROM and SRRB coordinators and University of Waterloo.
- There is a small lack of information translation between those actors (i.e. ethics requirements).
- A central coordinator for research in First Nations communities could help to get in contact with organizations involved.

Overall, the biomonitoring project will improve knowledge regarding environmental risk among First Nations communities and will orient risk communication strategy.

Community-based project involving every knowledge users and decision makers is essential to conduct a biomonitoring project and to justify the relevance of the study.