

Introduction

Leveraging the piece on lessons learned and pandemic preparedness led by Ogden et al., we are interested in an important topic that, as far as we can tell, is undermined—modelling to support small jurisdictions. While modellers from smaller jurisdictions were invited to participate in the external modelling meetings, the majority of the issues discussed were generic, and the discussions were dominated by regions with a substantial number of cases and outbreaks, typically occurring in larger jurisdiction. When the pandemic was in its early stages, larger jurisdictions focused on managing spread of the disease and (with too many vectors to manage) avoided importation into and out of jurisdiction; while smaller jurisdictions focused on managing importation and had very few cases. There were major discrepancies in capacity to model and manage the pandemic, transmission, and response strategies. Our goal here is to gather modellers from these smaller jurisdictions so that we can better understand the limitations and experiences, thus better preparing for the next time.

Examining success stories, when new SARS-CoV-2 variants emerge in Canada, there is limited lab capacity for genetic surveillance. Some smaller regions need to ship their samples to the National Microbiology Lab (NML) in Winnipeg for genetic sequencing (a practice quite common in Africa, where some smaller countries send samples to **RSA** and Kenya for sequencing). In 2021, PHAC launched an integral funding program led by a team at NML (Gelatos) to support lab capacity for all jurisdictions. This initiative provided PHAC and the PTs an opportunity to develop capacity and tailored support for each PT, including lab equipment, personnel, computation, training, etc. We would like to adapt a similar model with small jurisdiction modellers.

Objective

From our past experiences with COVID pandemic, we can well appreciate that the need for small jurisdiction infectious disease monitoring and modelling is imperative for the safety and well-being of a community. It seems an opportune time to discuss developing a team of interested people to establish a centralized data collection system, collaborate with local healthcare providers, and implement regular reporting mechanisms to track and respond to emerging health trends swiftly.

We aim to establish a community where modellers from smaller jurisdictions can exchange ideas, as the conditions are more relatable compared to larger jurisdictions. We, at PHAC, would like to hear about the challenges and experiences so that we can better understand the needs of smaller jurisdictions and prepare more effectively for the future. Additionally, we see this as an opportunity to bridge knowledge gaps.

For our academic partners, we at PHAC are happy to work with you to determine how to develop capacity, making your assistance valuable when supporting your own jurisdictions. We are also interested in jointly collaborating or leading a manuscript for publication on lessons learned and challenges for smaller jurisdictions.

Things to Discuss & Consider

Here are some potential topics for discussion:

1. **Members of the Group:**

Discuss who should be involved: any other key stakeholders might add valuable ideas and contribute in implementation of the vision.

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2. Initial vision statement:

a. Purpose:

i. Collaborative Approach:

1. Gather like minded and abled people to specifically focus on smaller jurisdiction infectious disease monitoring and modelling efforts
2. Foster collaboration between modelers from larger and smaller jurisdictions to share knowledge and insights.
3. Encourage the exchange of ideas and experiences to enhance the understanding of the specific challenges faced by smaller communities.

ii. Inclusive Participation:

1. Actively involve modelers from smaller jurisdictions in the planning and execution of external modeling meetings.
2. Ensure that their perspectives are considered, and their expertise is utilized in a way that addresses the unique challenges they face.

b. Scope and boundaries:

- i. Develop a support system for people monitoring and modelling infectious diseases for small jurisdictions
- ii. PHAC is a facilitator for this group, not solely responsible for modeling and solving problems for small jurisdictions, but collaborators in the process
- iii. No one is to feel obligated to attend meetings to be conscience of capacity levels
- iv. Everyone in the group is available to help each other in the group as capacity allows

c. Value proposition:

- i. Avoid modelling silos
- ii. Take advantage of increasing capacity amongst members
- iii. Potentially better pandemic preparedness

d. Aspiration:

- i. Alignment with organizational objectives:
- ii. Nicholas Ogden overall pandemic preparedness plan
- iii. CANMOD EIDM goals aligned

3. Long-term Vision:

a. A Guide for Data Collection and Analysis:

- i. Emphasize the importance of accurate and timely data collection in smaller jurisdictions to inform modeling efforts.
- ii. Develop strategies to improve data availability and quality in these areas.

b. A Cache of Tailored Models for Small Jurisdictions:

- i. Develop specialized models that are specifically designed to address the unique characteristics and challenges of smaller jurisdictions.
- ii. Consider factors such as population density, healthcare infrastructure, and socio-economic conditions that may differ from larger regions.

c. A Guide for Localized Response Strategies:

- i. Tailor response strategies based on the specific needs and capacities of smaller jurisdictions.
- ii. Recognize that one-size-fits-all approaches may not be suitable for diverse regions, and adapt strategies accordingly.

d. Build Modelling Capacity Within Smaller Jurisdictions:

- i. Invest in building the modeling and analytical capacity of professionals in smaller jurisdictions.
- ii. Provide training, resources, and support to enhance their ability to contribute meaningfully to discussions and decision-making processes.

e. Develop a Communication and Awareness Strategy:

- i. Improve communication channels to ensure that relevant information and best practices are shared with modelers and decision-makers in smaller jurisdictions.
- ii. Increase awareness about the importance of including diverse perspectives in pandemic modeling efforts.

4. Focus on Several Themes:

a. Science:

- i. Modelling: Tailored specific modelling
 - 1. Importation - Julien, Amy & Brian
 - 2. ABM – Nate, Julien & Brian
- ii. Counterintuitive - More complicated models necessary for smaller, simpler jurisdiction, conditions are more suitable for a test case to prove conceptual ideas, might not work for larger jurisdictions – discovering when approaches work and do not work – better modeling techniques are more approach (e.g. Read-Frost model, specific conditions need to be met in order to generate model, stochastic SI model, to be stochastic and not deterministic, need a few conditions to be possible to start a pandemic in a large population)

b. Public Health

- i. Tailored specific public health responses
- ii. Contact tracing explicit (contacting people directly) or implicit (social network)

c. Data

- i. Collection:
 - 1. contact tracing

- 2. citizen science and type of data: how are small data sets vs large data sets
 - ii. Connect Gelato to small jurisdiction modellers – create capacity in genomics
- d. Strategies:
 - i. Peace time
 - ii. Emergency

5. Research Funding and Support:

- a. Allocate research funding and support specifically for studies and projects focused on modeling and preparedness in smaller jurisdictions.
- b. Encourage researchers to explore innovative solutions tailored to the context of smaller communities.

6. Schedule collaborative working time.

- a. Guest presenters to connect with small jurisdiction modellers
- b. When to meet:
 - i. Weekly
 - ii. Biweekly
 - iii. Monthly
 - iv. Quarterly