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Research Note

Lessons Learned Conducting Implementation Science Research on the COVID-19 Vaccination Rollout During a Global Pandemic

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Abstract

When the COVID-19 virus rapidly spread across Canada in 2020, provinces and territories implemented various vaccine rollout plans. This commentary shares the experience of an implementation science research group conducting an equity-focused evaluation of the vaccine rollout plans of six Canadian provinces through a literature review and key informant interviews. Key lessons learned include employing humility to understand varying perspectives, appreciating the importance of limiting project scope, and developing strategies for connecting with decision-makers.

Keywords: Health equity, COVID-19

In September 2020, we began our journey in the Implementation Science Trainee Cluster in the Dalla Lana School of Public Health in the University of Toronto. The program is an interdisciplinary initiative that trains students to conduct research on implementation science questions. As we were at the height of the COVID-19 pandemic, we decided to conduct an equity-focused evaluation of the vaccine rollout plans of six Canadian provinces (Alberta, British Columbia, Manitoba, Nova Scotia, Ontario, Quebec) between January 2021 and April 2022 to offer the academic community an in-depth implementation analysis as well as "lessons learned" for applied audiences. We conducted individual semi-structured interviews with 39 key informants, ranging in length from 35 to 85 minutes. To be eligible, the informants must have served directly on COVID-19 vaccine rollout committees, task forces, or advisory panels across the six provinces. The largest number of informants were from Ontario (25%), followed by Nova Scotia (20%), Quebec (17%), British Columbia (15%), Manitoba (10%), and Alberta (10%). Among these, 71% of key informants represented an academic, government, or research institution, while 29% represented a community organization. A few key informants (< 10%) also served on national advisory boards. Our interviewees were government employees either at the provincial and/or federal levels and thus were funded via the public sector. These interviews took place virtually and were recorded and transcribed verbatim. This commentary is a personal reflection of our experiences (i.e., the research team) working on this timely project by reviewing the challenges and lessons learned in conducting an implementation study during a global pandemic.

Implementation science is defined as the study of strategies and methods for facilitating the uptake of research evidence into routine practice (Bauer et al., 2015). Within the context of a global pandemic, this type of research can play an important role in both an academic and applied policy sense, given the large amounts of information produced, and that critical policy decisions, ideally based on scientific evidence, are required to minimize disease transmission and reduce mortality rates. While undertaking the implementation science project outlined above, our research team met regularly to discuss the various challenges we were facing. Ad-hoc analyses of meeting minutes supplemented with further exchanges within our research team led to a short list of several interesting items related to the context of the rollout, participant recruitment, and the importance of triangulating data. During our qualitative analysis of interview data, we also noticed several quotes from our interviewees' experiences of navigating the pandemic that mirrored the challenges we were facing as a research team, as well as some new insights and perspectives regarding the framework that we were utilizing. As a result of these processes, we learned several lessons that we detail in this commentary, accompanied by several quotes from the interviewees. This short piece provides a unique opportunity for readers to get an inside perspective regarding the challenges encountered by an implementation science research team during the COVID-19 pandemic, which will be informative for those interested in conducting future research under similar conditions.

Context of the Rollout

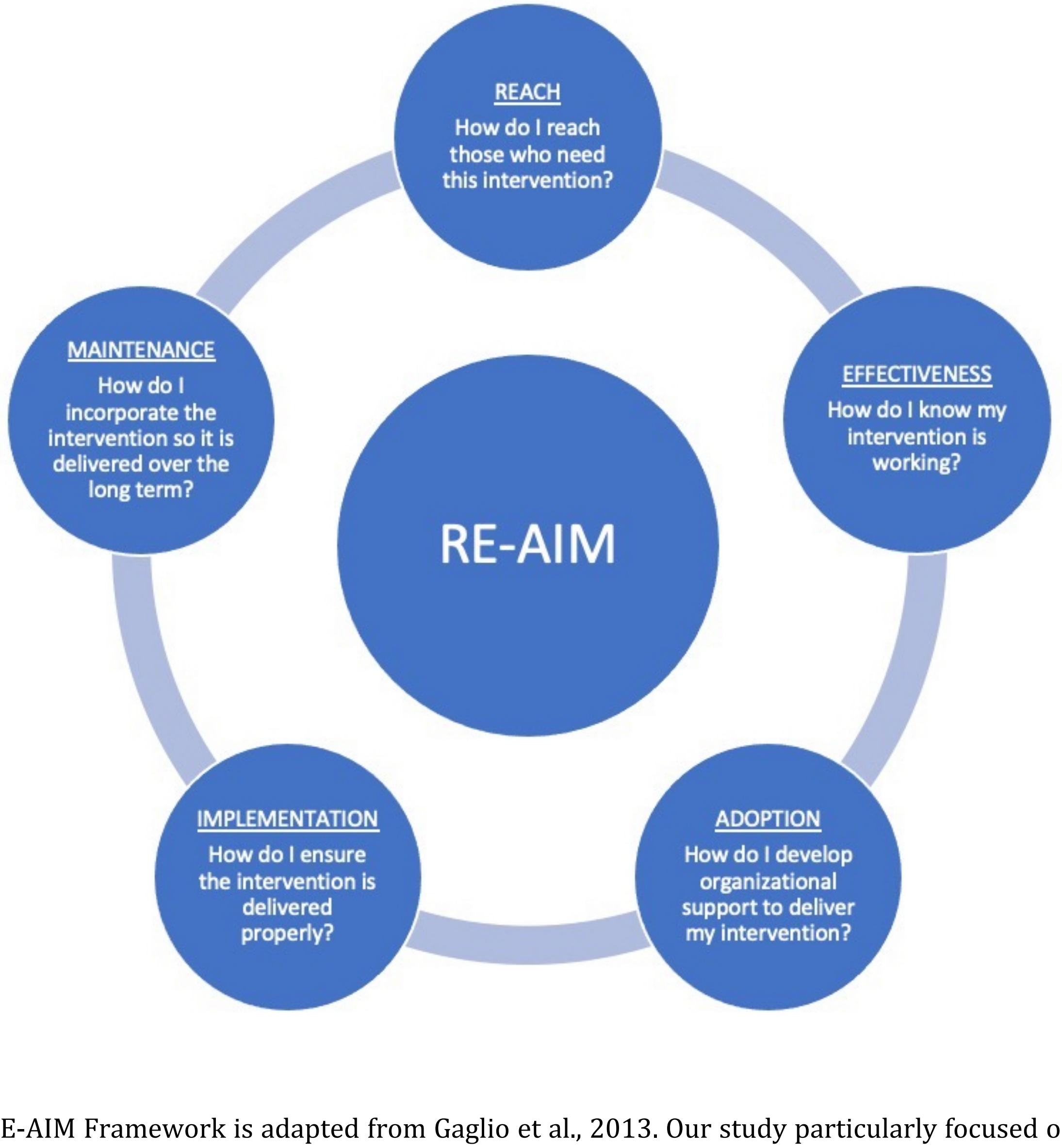
The first challenge we faced was the rapidly evolving nature of the pandemic itself, as well as the various COVID-19 rollout polices across Canadian jurisdictions. This made it quite challenging to decide which aspects of the vaccine rollout to focus on. The challenge of making decisions during the earlier days was noted by one of our interviewees as the following: "[It was like] flying a plane while building it. That's what happened at the beginning" (British Columbia).

We first wrestled with deciding on which priority populations to include in our study. Focusing on a certain priority population meant that another group would not be addressed. Interestingly, one of our interviewees made a similar observation: "Once you open the door to priority groups, then everyone wanted to be a priority and, when everyone's a priority, nobody's a priority" (Nova Scotia). To decide which priority populations to focus on, we relied on the RE-AIM framework (Reach, Effectiveness, Adoption, Implementation, Maintenance), which has been applied in research to evaluate public health initiatives. We focused specifically on the "Reach" component (see Figure 1; Gaglio et al., 2013), which included four questions to be assessed:

1. Was the population prioritized in the province? If yes, at what point of the rollout plan?
2. Was there clear communication/ justification for the choice of this priority population?
3. What strategies or interventions were used to reach/engage with the prioritized population?
4. What strategies were used to overcome potential barriers to vaccine access for this population, including strategies to improve trust and reduce vaccine hesitancy?

The RE-AIM framework guided us to focus on the following groups: First Nations, Inuit, and Metis populations; Black communities; essential workers; individuals experiencing homelessness; and individuals with disabilities (see Table 1). These were complex decisions that involved striking a balance between following existing frameworks in the literature and selecting population groups based on our own interpretations regarding appropriateness, as well as experiencing data availability issues and general research ethics issues related to human involvement, all within the context of operating under a student research budget. More details on how this framework was applied will be provided in our forthcoming manuscripts (Bashir et al., 2023; Sobers et al., 2023).

Figure 1
RE-AIM Framework



Note. RE-AIM Framework is adapted from Gaglio et al., 2013. Our study particularly focused on the REACH component of this framework.

Table 1

Priority Populations Selection Characteristics

	High risk of transmission due to biological, social, economic, and structural factors	Hard to reach / remote community	Living in high-risk congregate settings	Cannot work from home
First Nation, Inuit, and Metis	✓	✓		
Black communities	✓			
Essential workers	✓			✓
Individuals experiencing homelessness	✓	✓	✓	
Individuals with disabilities		✓	✓	

Participant Recruitment

Another challenge we faced was connecting with potential interviewees, particularly because we did not have many pre-existing connections. We were fortunate to have many interviewees generously share their time with us, and we appreciate that we received only polite and courteous responses. However, several did not reply to our emails, particularly in the initial phase before we built connections with the interviewees. Because individuals' roles overlapped and were evolving, it was difficult to determine someone's current role and valid contact information. Snowball sampling and taking recommendations from connections were the most successful strategies, starting from a small circle of individuals that were recommended by our network and expanding outward. We also learned the sensitive nature of contacting multiple people from the same organization, which risked giving the impression that we were being inconsiderate of their time as the information provided might be considered redundant. We learned to tailor emails carefully to underscore the important uniqueness of each perspective, yielding more positive responses. Some also declined interviews for various external socio-political reasons, which was understandable and inevitable. To our surprise, a few (albeit a very small number) agreed to interviews but recused their data after the interviews were completed, which had seldom happened in our experience of conducting other qualitative studies. We need be cognizant of the types of perspectives that will be captured and those that will be missed in the study. This is a constant challenge in any type of research with human participants. A survey where participants can write responses anonymously without their identity being known to the research team could be a strategy worth considering for future studies focusing on reaching under-represented views. Other innovative efforts should continue to be investigated in future research to reach perspectives that are often missed while also recruiting under an ethical framework without being coercive.

The Importance of Triangulating Data

We also struggled with encountering conflicting perspectives pertaining to our research. Often, the data collected from our literature review did not match the actual implementation of the COVID-19 vaccination rollouts across various provinces, either because details were unavailable, concepts were rapidly changing, or information was outdated. Our interviewees explained how the vaccination plans in their respective provinces played out "in the real world," which provided us with an opportunity to triangulate data from our literature review with the information collected via our interviews. These experiences encouraged us to appreciate that the differences between "best practices" as articulated in policy documents and their subsequent implementation are oftentimes incongruent, providing great opportunities for deep learning about the topic at hand and qualitative policy research methodology throughout our project.

We also learned to appreciate that the priority population groups chosen were not a monolith—that one voice does not speak for all, and that we must consider various perspectives on equity. While some interviewees believed that race-based prioritization was essential to achieving health equity, others believed that the observed inequities were due to existing differences in clinical comorbidities and age. Other interviewees also suggested that identifying predetermined groups of prioritization often depends on their ability to advocate for themselves (e.g., essential workers), and there are other priority groups who could be at higher risk but may not be prioritized because there is no advocacy group for their situation. Those who came from these perspectives often believed that age is a better strategy of prioritization to truly "level the playing field" for all different priority groups. We appreciated these various perspectives, and we recognized the importance in keeping an open mind when devising a research question; no single framework is perfect, and it is up to the audience, policy-makers, and advocates to decide how the results should be interpreted. The two quotes below illustrate differing opinions regarding the challenges faced in identifying priority populations:

> *I have a hard time with the concept of grouping populations given its heterogeneity. Within the Black population who came to Canada, it's varied, from ... multi-generational families, that are as keen as you could imagine to people who just moved here recently. I think the location you come from, your educational background, your history ... these things all factor into whether you're actually at higher risk. I don't think being Black makes you a higher risk, I think where you come from can change your risk profile because you might be coming from a lower or middle-income country versus a high-income country, very different ... To me prioritizing a group that large and heterogeneous is a challenge. (Alberta)*

> *It is just people who knew they had a condition or that advocated for their access or whatever would still be more likely to get access earlier than someone who had the same condition and couldn't advocate in the same way. So age kind of leveled that playing field too. (Nova Scotia)*

In summary, our main takeaways from this experience were the following:

1. We need the humility to understand different perspectives to one problem, as oftentimes what was written on paper may not be how it occurred in practice.
2. Unlike during other qualitative studies, when studying decision-making behind a global pandemic there may be individuals who decline or recuse their interview data due to outdated information or socio-political forces, and this is not a reflection on us as the researchers.

3. We must appreciate that evaluating every aspect of a problem is not possible; clear study parameters and documentation of decision-making trails help with the usability of this type of research, and thus knowing when to limit project scope due to external constraints while still doing good research is an important skill for work on something as constantly evolving as a global pandemic.
4. Lastly, while cold emailing individuals takes time, it can pay off once credibility is established with some connections.

We hope this commentary may provide some insight into the challenges that research groups may face when conducting similar work in the future.

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