Reach Alliance

Operation Remote Immunity:

Providing Vaccines in Remote Indigenous Communities

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This research report reflects consultations with the Weeneebayko Area Health Authority (WAHA), an Indigenous-led healthcare network that serves communities along the James Bay and Hudson Bay coasts in Northern Ontario, Canada, and Ornge, the nonprofit air ambulance service involved in vaccine provision and transportation in Operation Remote Immunity 1.0 and 2.0. This research was made possible through the Reach Alliance, a partnership between the University of Toronto's Munk School of Global Affairs & Public Policy and the Mastercard Center for Inclusive Growth. This research was also funded by the Ralph and Roz Halbert Professorship of Innovation at the Munk School of Global Affairs & Public Policy.

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Cover photo: Members of Weenusk First Nations in Peawanuck involved in the ORI operations (Credit: Weeneebayko Area Health Authority)

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Executive Summary

In December 2020, the Ontario provincial government's vaccine task force announced that remote Indigenous communities in Northern Ontario would be among the first groups to be prioritized to receive COVID-19 vaccines. In a matter of months, the first phase of Operation Remote Immunity (ORI) was launched, and subsequent phases proceeded over 2021 and 2022, resulting in tens of thousands of Indigenous people being vaccinated.

ORI reached hard-to-reach communities (i.e., accesible only by plane year-round) that lack the healthcare infrastructure required to administer a rapid and thorough vaccine campaign. However, the operation faced significant challenges due to logistical considerations and, importantly, the ongoing effects of settler colonialism and pervasive anti-Indigenous racism. The lack of trust in the medical care system among Indigenous peoples posed a significant obstacle in executing the operation.

Despite these challenges, over 800 missions were deployed throughout ORI's various phases, which were possible as a result of several factors. Indigenous leaders participated in the initial design, planning, and execution of ORI, greatly aiding in the program's rollout. Ornge, a nonprofit organization responsible for Ontario's air ambulance and critical care transport, provided efficient operational and logistical leadership. Co-leadership is critical in implementing various trust-building meaures. These initatives include increasing awareness of Indigenous histories and community-specific need, ultimately fostering greater cultural competency among ORI staff. Ornge's streamlined leadership also ensured that operational logistics were continuously adapted to specific local contexts.

This report draws on extensive secondary research and interviews with Ornge leaders and task team members, as well as with Indigenous and non-Indigenous policymakers and medical volunteers. The research team received ethics approval from both the University of Toronto's

Research Ethics Board and the WAHA Research Ethics Council. However, the latter approval was received in late 2022, making it impossible for us to conduct fieldwork in the WAHA communities. A significant limitation of this project is the absence of interviews with Indigenous leaders in remote Ontario and WAHA health professionals. Therefore, in this report we focus on the operational dynamics of ORI. Future research will require further collaboration and conversations with WAHA members involved in ORI and the chiefs of the six James Bay Communities (Town of Moosonee, Moose Factory, Fort Albany First Nation, Attawapiskat First Nation, Weenusk First Nation [Peawanuck], and Kashechewan First Nation).

As the First Nations Information Governance Centre emphasizes, much Indigenous research tends to be negative, focusing on "problems without looking at the positive, which reinforces the portrayal of First Nations as poor, sick, dependent, and violent."[1] This case study and its team's year-long research efforts highlight the resiliency and strength of Indigenous communities and leadership during the COVID-19 pandemic.

This case study is relevant to several UN Sustainable Development Goals, specifically:

GOAL 3: To ensure healthy lives and promote well-being for all at all ages (in particular, 3.1, 3.4, 3.8, and 3.9.b)

GOAL 10: To reduce inequality within and among countries (in particular, 10.1, 10.2, 10.3, 10.6).

Hard-to-Reach Indigenous Communities

On March 11, 2020, the World Health Organization declared the SARS-CoV-2 (COVID-19) pandemic. In the early stages of the pandemic, Indigenous leaders in Canada expressed concern regarding COVID-19 spreading in First Nations, Métis, and Inuit populations. Given a lack of easily accessible medical resources and comprehensive healthcare infrastructure in those communities, many Indigenous leaders were concerned that federal and provincial responses to the pandemic would fail to mitigate the effects of the virus in geographically remote First Nations communities.

The historical and contemporary realities of colonialism and anti-Indigenous racism — including the implications of the federal *Indian Act*; cultural genocide inflicted through the residential schooling and child welfare systems; race-based discrimination in the justice system evidenced by higher likelihoods of incarceration and police brutality directed at Indigenous people; and the overrepresentation of Indigenous people in the Canadian criminal justice system — have had a significant negative impact on health outcomes for Indigenous people, their families, and communities.[2] Although Canada boasts universal healthcare coverage, massive health disparities persist between First Nations, Métis, and Inuit populations compared with non-Indigenous populations.

Nearly three in five First Nations adults, one-third of First Nations youth, and more than one in four First Nations children report having one or more chronic health conditions. These

1 "Ownership, Control, Access and Possession (OCAP™): The Path to First Nations Information Governance," The First Nations Information Governance Centre, May 2014.

2 In this report, "anti-Indigenous racism" refers to the historical, structural, and lived forms of racial discrimination experienced by First Nations, Métis, and Inuit populations in Canada. While anti-Indigenous racism encompasses numerous aspects of public policy, here we are most concerned with the effects of this type of racism in the healthcare system in Canada. See "Anti-Indigenous Racism in Canada," National Collaborating Centre for Indigenous Health (NCCIH).

conditions, disproportionately reported among Indigenous people, mean greater susceptibility to the adverse effects of COVID-19. Exacerbating such conditions are other environmental concerns such as overcrowding, the lack of access to clean water, endemic poverty, unemployment, and food insecurity.

One hundred and thirty-three Indigenous communities in Ontario represent at least seven major diverse Indigenous cultural and linguistic groups. Over 30 of these communities are considered remote and accessible only by air or ice roads for portions of the year. There are more remote First Nations in Ontario than in any other region in Canada. Most of these nations are represented by the Nishnawbe Aski Nation (NAN), a political organization established in 1973 that represents First Nations people from the territory encompassing James Bay Treaty no. 9 and portions of Treaty no. 5, a land mass equivalent to two-thirds of Ontario. In total, the NAN represents 49 First Nations and approximately 45,000 Indigenous people living both on and off reserve.

The development of a vaccination campaign was a critical initial step in ensuring as many Indigenous people as possible in Canada were protected from the disproportionately higher mortality rates caused by COVID-19 among vulnerable populations, especially in remote communities that lack adequate health care. In partnership with NAN and the provincial air ambulance service Ornge, Operation Remote Immunity (ORI) was launched in early 2021, tasked initially with administering the Moderna vaccine to remote Indigenous communities in Northern Ontario.

By the end of the first round of missions, ORI had delivered upwards of 25,000 doses of the vaccine to 31 remote First Nations communities and the municipality of Moosonee in Ontario. The second phase, or ORI 2.0, launched in May of 2021 and administered just under 6,000 vaccinations (including boosters) to First Nations individuals aged 12 and up in the areas represented by NAN. The last ORI mission, ORI 3.0, concluded in March 2022 and administered approximately 9,700 additional vaccine doses.

The operation provided rapid vaccinations to many Indigenous people in remote Ontario. Several factors contributed to this outcome. The co-leadership of Indigenous health authorities such as the Weeneebayko Area Health Authority's CEO, Lynne Innes, and Ornge's CEO, Dr. Homer Tien, ensured that community consent was obtained from the very start of the ORI campaign and that Indigenous leaders were consulted and their views respected throughout.

ORI set out to deliver COVID-19 vaccines to 31 remote Indigenous communities and the municipality of Moosonee in Northern Ontario (Figure 1). These communities represent seven Indigenous ethnic and linguistic groups spread across 543,000 square kilometres.[3] The communities are further clustered into regional tribal councils that provide social services to their members. They vary by size — the smallest, Slate Falls, has 185 inhabitants[4] while the largest, Pikangikum, has 3,273 people.[5] These differences in geography, culture, governance, and demography mean that each community faces its own distinct challenges with respect to healthcare provision.

Given their geographic locations and the lack of access to medical care facilities, remote Indigenous communities are especially vulnerable

3 "Indigenous Communities in Ontario," Indigenous Services Canada, November 2021.

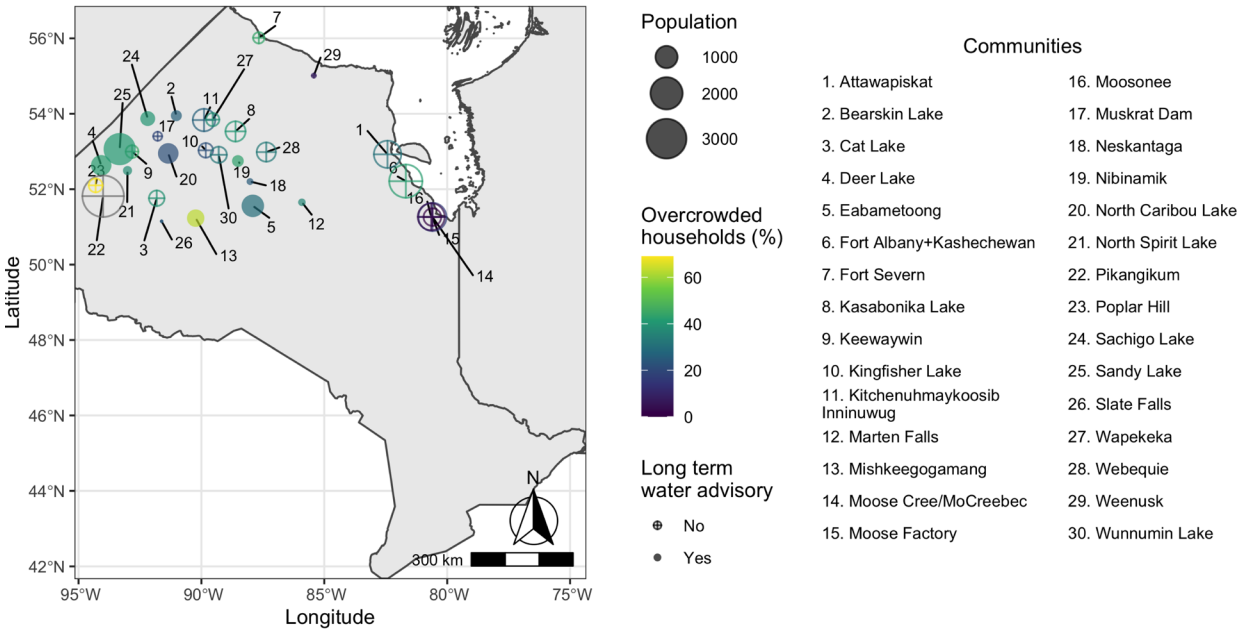
4 "2016 Census Aboriginal Community Portrait — Slate Falls First Nation," 2016 Census Aboriginal Community Portraits, January 2020, Statistics Canada.

5 "Registered Population: Pikangikum," Crown-Indigenous Relations and Northern Affairs Canada, December 2021.

to the adverse effects of the spread of COVID-19. Furthermore, the absence of year-round accessible road infrastructure means that remote Indigenous communities have to rely on different modes of transport throughout the year. Summer barges and winter roads formed from packed snow and frozen waterways support heavy freight shipping, while air transportation is otherwise needed for travel and the delivery of essential supplies. Access to summer barges and winter roads depends on the season, and flight delays occur regularly because of inclement weather and poor airport infrastructure. These factors pose myriad difficulties to vaccine supply procurement and vaccine delivery, thus further hampering the communities' ability to respond to the pandemic.

Pre-existing Health Inequities

The challenges of healthcare provision to remote Indigenous communities are compounded by pre-existing health inequities. As a preventative measure against COVID-19, for instance, proper hand sanitization requires access to clean water. However, 49 per cent of remote Indigenous communities in Canada have high-risk water systems and a higher likelihood of producing unsafe water.[6] As of July 2022, 11 out of the 31 remote Indigenous communities in Ontario were affected by long-term drinking water advisories (Figure 1).[7] Certain communities such as Pikangikum rely on cisterns, which are linked to an increased risk of COVID-19 outbreaks.[8]



Note: Community population size and the extent of overcrowdedness (defined as having more than one person per room) are derived from the 2016 Census Aboriginal Community Portraits. Long-term water advisory status (i.e., having water advisory for more than 12 months) was retrieved from Indigenous Services Canada.

Figure 1. Demography and living conditions of the 31 remote Indigenous communities served by Operation Remote Immunity.

6 "National Assessment of First Nations Water and Wastewater Systems: National Roll-Up Report Final," Neegan Burnside Ltd., April 2011.

7 "Map Of Long-Term Drinking Water Advisories on Public Systems on Reserves," Indigenous Services Canada.

8 Jaida Beaudin, "Water Is Life: The Fatal Links Between Water Infrastructure, COVID-19, and First Nations in Canada," The Yellowhead Institute, March 9, 2021.

The dire circumstances are exacerbated by overcrowded households, which are associated with higher rates of respiratory illness. On average, around one-third of households in remote Ontario Indigenous communities are overcrowded,[9] impeding many peoples' ability to self-isolate when they are infected with COVID-19.

Complicating matters further, many remote Indigenous communities lack permanent physicians in local health facilities and instead rely heavily on nursing stations, which are often understaffed and underresourced. Residents often have to be flown out of their communities to receive medical treatment in distant cities. Airlift services are frequently overbooked and prohibitively expensive. And when residents do gain access to the healthcare system, they face pervasive negative stereotypes. The lasting impacts of colonialism and racism lead some physicians to deny patients necessary treatments and referrals.

Because remote Ontario Indigenous communities are medically vulnerable populations that have limited healthcare access, reaching such hard-to-reach communities for vaccine delivery requires a meticulously planned operation that rapidly distributes medical interventions to individuals who live across an extensive and remote geographic area. An effective campaign also requires a culturally sensitive and context-specific approach to healthcare provision that accounts for diversity in culture and beliefs, as well as specific challenges, including historical injustice in the medical system, which remote northern Indigenous communities have faced.

Context: Canada's Vaccine Procurement Efforts During the Pandemic

Canada relied on foreign sources of vaccines for its COVID-19 immunization campaigns. Dependence on foreign procurement was problematic, especially in the early days of the pandemic. Most notably, the emergence of so-called vaccine nationalism in other countries, such as the Biden administration's America-first policy and the EU's threat to restrict vaccine exports, threatened the already-limited vaccine supply to Canada.

In August 2020, the federal government secured vaccine procurement deals with Novavax and Johnson and Johnson. Agreements with Pfizer, Moderna, GlaxoSmithKline/Sanofi, and AstraZeneca were confirmed the following month. However, regulatory hurdles delayed the delivery of the Pfizer-BioNTech and Moderna vaccines to all of Canada's provinces. Canada's vaccination rate thus lagged initially, despite the federal government's procurement agreements with foreign suppliers.

COVID-19 National and Provincial Immunization Strategy

According to the federal, provincial, and territorial statement of common principles, Canada's COVID-19 immunization strategy was to be based on a differentiated but shared responsibility of the three levels of government.[10] In this arrangement, the federal government was responsible for the regulatory approval of vaccines, vaccine procurement, setting vaccine usage guidelines, and supporting jurisdictional vaccination efforts. Provincial and territorial governments, meanwhile, had responsibility for all aspects of distribution program planning and execution.

9 Statistics Canada defines overcrowdedness as having more than one person per room. Figure calculated based on 2016 census.

10 "COVID-19 Immunization: Federal, Provincial and Territorial Statement of Common Principles," August 2021, Government of Canada.

With respect to Indigenous peoples, while the federal government is responsible for federal populations and on-reserve Indigenous communities, provincial governments possess a degree of operational flexibility to reflect specific Indigenous populations' needs within their provincial jurisdictions. The National Advisory Committee on Immunization (NACI), a federal advisory body that provides evidence-based public health advice to the Public Health Agency of Canada (PHAC), played a significant role in identifying priority populations for early COVID-19 immunization. The preliminary COVID-19 immunization guidelines of November 2020 identified Indigenous communities as one of the priority vulnerable populations and slated them to be among the first to receive the vaccines.

In December 2020, the Ontario government formed the COVID-19 Vaccine Distribution Task Force to provide advice and lead the province's planning and execution of its COVID-19 immunization efforts. Importantly, the task force included Indigenous leaders to provide advice and to prepare local Indigenous communities to receive the vaccine. Task force members specifically included nongovernmental leaders such as Dr. Homer Tien, president and CEO of Ornge, as well as RoseAnne Archibald of the Taykwa Tagamou Nation, who was Ontario's Regional Chief. Ontario's deputy minister of Indigenous Affairs, Shawn Batise, participated as well in an *ex-officio* capacity.

Early on, the task force engaged with Indigenous leaders in discussions about healthcare barriers in remote communities, prioritizing Indigenous communities in the vaccine rollout and identifying additional resources required for a successful vaccine campaign. The COVID-19 outbreak in Indigenous communities in northern Manitoba in late 2020 intensified these ongoing discussions in Ontario. It was in this urgent context that Deputy Minister Batise and Nishnawbe Aski Nation (NAN) Grand Chief Alvin Fiddler began to plan the logistics for a vaccine campaign tailored to the needs and challenges of First Nation communities in northern Ontario. Critically, NAN was tasked with drafting a proposal outlining the resources and nongovernmental contractors required for such a plan.

Batise and Fiddler ensured that the task force mobilized broad political support from within the government and local communities, which was needed to implement an effective plan. Our interviews with government officials and other ORI leaders revealed that this was one of the rare times the provincial government's Ministry of Health stepped back from asserting total control over the campaign, and instead ceded considerable decision-making authority to other ministries as well as to Indigenous communities and political leaders. Interviewees cited the importance of having the Ontario Regional Chief on the provincial government's Vaccine Distribution Task Force from the very beginning. This created a shared understanding of Indigenous communities' needs and priorities among the other task force members. In this regard, the development of ORI reflected a co-led and collaborative effort among various ministries and Indigenous community leaders.

Executing ORI

On December 22, 2020, the provincial government's task force requested Ornge to take the operational lead of ORI. Ornge was selected because of its demonstrated efforts to connect remote communities with the provincial healthcare system, as well as its extensive experience in working in many northern Indigenous communities. In other words, Ornge was chosen because of its medical expertise, its equipment (including aircraft) and resources, efficient organizational structure, and on-the-ground operational experience. Homer Tien, the CEO of Ornge, was tasked with leading the province's vaccine campaign, replacing

General Rick Hillier as the head of the provincial vaccination effort in April 2021.

Tien recounted how, in late December 2020, he and his organization were informed of the ambitious target set by the provincial government and Indigenous leaders: to deliver two doses of the COVID-19 vaccine to remote Indigenous communities by the end of April 2021. During the first phase of ORI, vaccination teams were typically deployed into communities for one week. Teams were arranged in advance, but because ORI relied on volunteer medical staff, the teams were nonetheless often set up in an ad hoc manner, with team members meeting each other for the first time at the start of the week. Before the start of the mission on Monday, the teams received training during the preceding weekend.

Much of the logistics coordination with Indigenous communities was carried out before each vaccination mission to ensure local input was considered and implemented. Frequently, ORI team leads would conduct reconnaissance missions, also known as "recces," prior to the vaccination campaigns. Recce missions involved surveying the local terrain and communities, as well as promoting the upcoming vaccine clinic. During the recces, Ornge also sent one or two paramedics to meet with local band council members and the designated "community coordinator" to make necessary arrangements prior to the vaccination mission.

During their deployments, the vaccination teams returned to their base daily, rarely staying in communities. The NAN warned ORI planners that communities lack the resources to host vaccination teams. Under the guidance of the Indigenous community coordinator, band members established temporary clinics in predetermined community sites. Vaccinators stored and transported the COVID-19 vaccines in "Credo Cube" containers — reusable receptacles that ensure vaccines are stored at the appropriate temperature (Figure 2). Most vaccinations were carried out in the temporary clinics, though in some cases vaccinators administered the vaccines in the homes of those who were unable to visit the clinic. Throughout all of the local deployments, vaccination teams maintained vaccination records to track adverse events, confirm vaccination status, and follow up on booster doses.

Figure 2. The Credo Cube is a vaccine container capable of maintaining a temperature of -20°C for up to 36 hours. ORI used it to transport the Moderna COVID-19 vaccine. (Credit: Credo® Thermal Packing Solutions)

ORI involved three rounds of missions (Figure 3). ORI 1.0, which launched in February 2021 and concluded in April, administered around 25,000 doses of the Moderna vaccine to eligible adults in remote northern Indigenous communities. ORI 2.0 commenced nearly two months later at the end of May. In this phase, the Weeneebayko Area Health Authority (WAHA) led the vaccination efforts in northeastern communities, while Ornge continued to lead vaccination teams for NAN communities in the northwest. ORI 2.0 vaccinated 6,000 youths aged 12 to 17 with the then newly approved Pfizer-BioNTech COVID-19 vaccine. ORI 3.0, which ended in early 2022, was organized as a partnership between the federal government agency Indigenous Services Canada, WAHA, and Sioux Lookout First Nations Health Authority (SLFNHA). ORI 3.0 started in November 2021 and aimed to deliver first, second, and third (booster) doses of the COVID-19 vaccine, as well

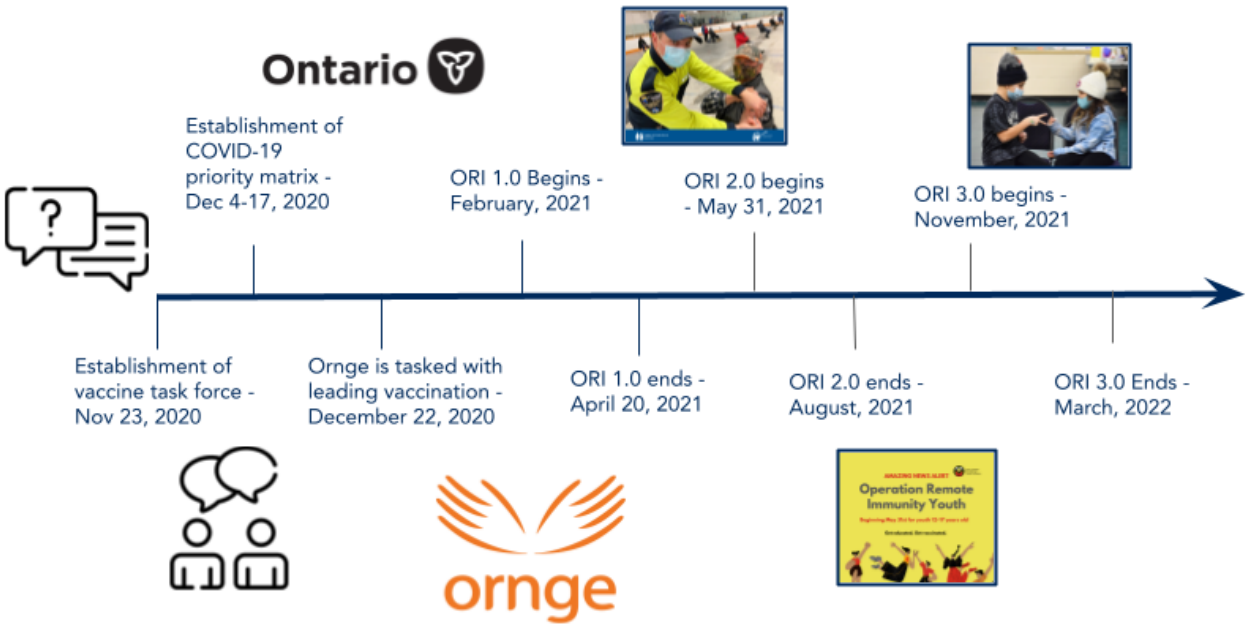


Figure 3. Operation Remote Immunity timeline (2020–2022)

as pediatric doses, which had been introduced in late 2021. The ORI 3.0 campaign ended on February 21, 2022, with approximately 9,700 doses of the COVID-19 vaccine administered.

WAHA's Role

The implementation of ORI involved two regional strategies. The northwest strategy centred on a partnership with SLFNHA, while the northeast strategy was built on a partnership with WAHA. We focus on the implementation of ORI in the northeast communities that are served by WAHA.

WAHA is a First Nation regional health authority serving six communities in the Mushkegowuk Territory, encompassing Moose Factory, Moosonee, Fort Albany, Kashechewan, Attawapiskat, and Peawanuck.[11] WAHA offers a comprehensive set of primary and acute healthcare services and community-based speciality clinics through the integration of Weeneebayko Health Ahtuskaywin / Weeneebayko General Hospital in Moose Factory, James Bay General Hospital in Moosonee, Fort Albany Hospital, and Attawapiskat Hospital, and the nursing stations in Kashechewan and Peawanuck.

Challenges

Contextual Unawareness

Contextual unawareness — the lack of familiarity with the lives of Indigenous people and with Indigenous cultures — posed a significant challenge during the initial implementation of ORI. Despite concerted efforts to include and integrate the voices and insights of Indigenous leaders in the provincial government task force, many staff and volunteers involved in the campaign were not from the northern Indigenous communities.

Several non-Indigenous personnel who contributed their medical skills to ORI recounted

11 "Community Information Sheet," Weeneebayko Area Health Authority.

their unfamiliarity with the local terrain and the culture and living conditions of the remote Indigenous communities. This disconnect made it difficult to build trust between ORI staff and Indigenous community members. Indeed, Indigenous medical professionals involved in ORI expressed anxiety about non-Indigenous vaccinators and ORI staff members reinforcing negative cultural stereotypes.

The lack of contextual understanding can be potentially harmful, especially if healthcare providers are unaware of the painful memories that Indigenous people in Canada have when it comes to health care. While ORI planners were keenly aware of the challenges of cultural ignorance and put measures into place to mitigate it, there are serious consequences when non-Indigenous healthcare providers are unable or unwilling to adjust their practice, methodology, and interaction to accommodate their Indigenous patients.

Cultural (In)competency

Despite recent efforts toward reconciliation, many Canadians still lack the knowledge and understanding of Indigenous history and culture, particularly the devastating impact and legacies of colonial violence on Indigenous communities. To address this, ORI planners implemented cultural competency training to familiarize healthcare professionals with their patients' cultural backgrounds. The hope was that this cultural competency training would enable healthcare professionals to engage empathetically with patients from diverse backgrounds, thus improving overall health outcomes.

Both non-Indigenous and Indigenous staff and volunteers in ORI expressed concerns about the general lack of understanding around Indigenous culture, history, practices, and knowledge. In one interview, an Indigenous healthcare professional stated that many ORI staff members did not fully appreciate the cultural differences that they would encounter during the vaccination missions. Indigenous health professionals involved with ORI also worried that cultural incompetency, despite the good intentions of non-Indigenous healthcare workers, could dissuade Indigenous community members from receiving the vaccine.

Adapting Operational Skills and Expertise

Ornge was selected to lead the operational aspects of ORI because of its experience in connecting remote communities with Ontario's healthcare system. However, Ornge is an air ambulance service and not specifically a vaccination service. Although there was some initial concern about Ornge's leadership role in the vaccination campaign, Ornge proved to be highly adaptable. One way that the organization adapted involved the recruitment of emergency paramedic staff from Ontario's Emergency Medical Assistance Teams (EMAT). Characterized by its organizational flexibility and modularity, EMAT is a provincial mobile medical unit specially trained to address a variety of major medical emergencies, including infectious disease outbreaks.

Since 2004, EMAT teams have participated in over 40 outdoor training sessions and operational deployments, including in Indigenous communities.[12] Examples of healthcare support involving First Nation communities include aiding in the provision of primary health care for evacuees during the 2011 forest fires in Thunder Bay and Greenstone and providing logistical support to rebuild clinic facilities when the Moosonee's First Nation Community Health Clinic was burned down in 2012.

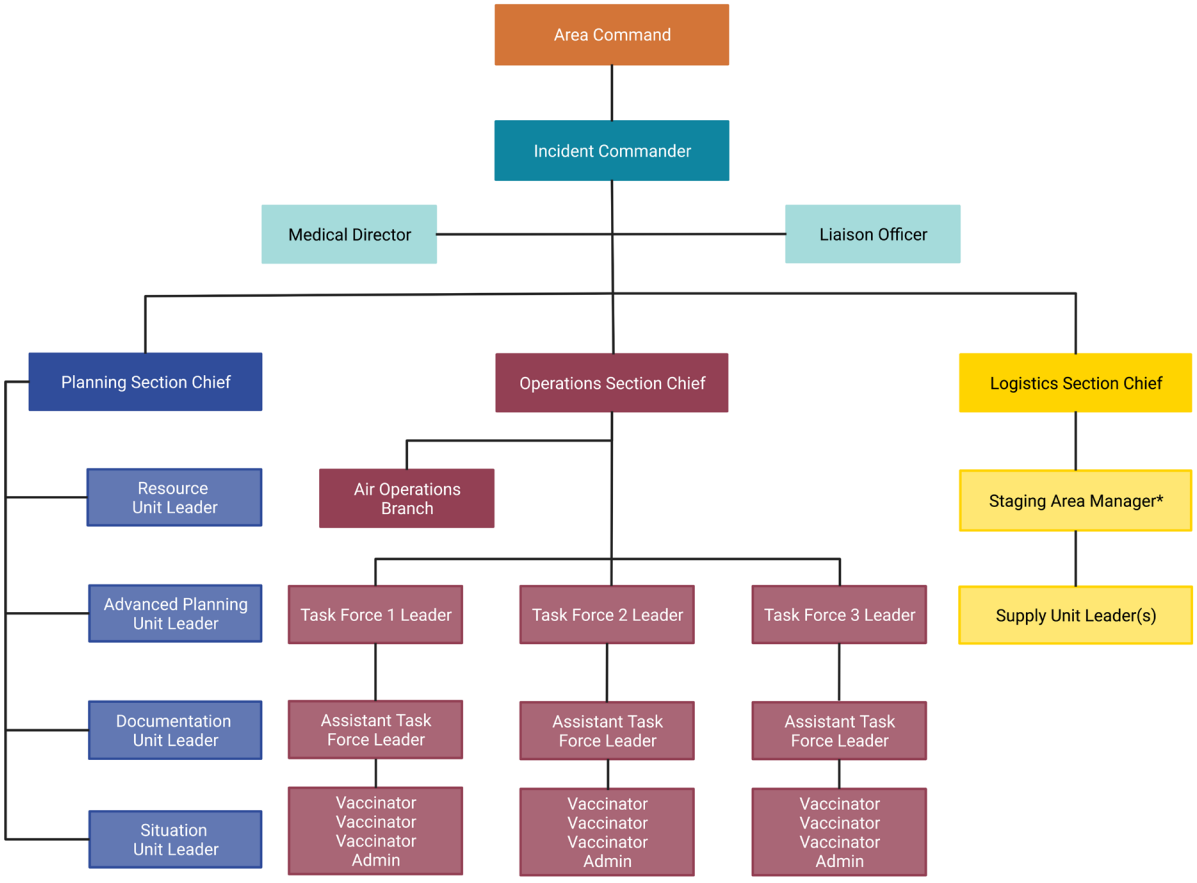
12 Not including classroom/warehouse-based training.

What Worked

ORI's Organizational Structure

To facilitate efficient processes, Ornge leveraged the Incident Management Systems (IMS) framework, an operational model used by the military, as well as staff expertise drawn from Ontario's past Emergency Medical Assistance Teams (EMAT) operations. The IMS framework was first utilized in 2008 and later incorporated as part of the full-scale training exercises in subsequent years, in collaboration with Canadian Forces Base Meaford. The IMS framework standardized Ornge's operational workflow in implementing ORI. In practice, IMS laid out a command structure that required all staff to adhere to explicit lines of vertical and horizontal accountability, which in turn allowed for the rapid deployment of human resources, efficient logistics coordination, and thorough engagement with local communities.

The IMS model adopted by Ornge includes four leadership sections, each tasked with overseeing a specific aspect of the ORI campaign (see Figure 4). The planning section was responsible for documentation and resource management; the logistics section oversaw the provision and deployment of equipment; and the air operations section coordinated delivery and travel. The entire vaccination effort was managed by the area command and the incident commander, who set the operation's overall objectives and coordinated each mission.



Note: The lines indicate a direct supervisory relationship. *Indicates positions that were present in ORI 1.0 but not in ORI 2.0. Figure adapted from Ornge Operation Remote Immunity Introduction Package — March 21 to 26, 2021 (Version 5.0).

Figure 4. Incident Management System (IMS) framework adopted by Ornge during Operation Remote Immunity (ORI)

Much of the on-ground tasks were carried out by modular vaccination teams, each led by a task team leader and an assistant task leader, who were supported by (typically) three vaccinators and one administrator (Figure 4). The two task force leaders played a supervisory role and oversaw vaccine storage and medical documentation. The main task force leader also coordinated with local community leaders and the logistics section to ensure proper resource and transportation management.

Task force leaders also served as the point of communication and accountability between the vaccination team and the incident commander, as well as with the central incident management team, which included the supervisory heads of the planning, logistics, and air operations sections. While the task force leader was responsible for external liaison, the assistant task force leader was responsible for the internal administration of the vaccination team, including completing paperwork and managing equipment and food.

Adopting the IMS framework was critical to improving ORI's operational efficiency and effectiveness because it standardized roles among staff and volunteers. During the initial phases of ORI, healthcare workers were in short supply. Recruiting qualified staff was a major challenge for Ornge, which was tasked with executing ORI in addition to maintaining its day-to-day operations as the province's air ambulance provider.

The issue of personnel shortages was exacerbated by the lack of coordination among staff and health professionals, which led to duplicated tasks and roles. One senior administrator involved with ORI remarked that during the initial planning stages of the operation there were "multiple people working on schedules, multiple people purchasing freezers and refrigeration equipment." The introduction of the IMS model helped to resolve the problem of role redundancy and contributed to effective staff management and human resource allocation and deployment.

The IMS approach adopted throughout the entire operation — from the overall campaign to within specific functions (e.g., human resource deployment) and within the task force teams — also prevented clinical hierarchies and medical professional norms from interfering with team dynamics. One team leader, for instance, recounted how he was once tasked with supervising a physician vaccinator who was also the associate dean of medicine at a university. He noted how his role as task team leader, as defined by the IMS framework, empowered him to supervise and command the physician during ORI mission deployments, an arrangement that would have been implausible in a regular clinical setting.

In short, the IMS approach was effective because it laid out a shared set of principles, goals, and role responsibilities and accoundabilities that were implemented consistently throughout the entire ORI campaign. As another task team leader noted, "even if everything was to change in how we implemented ORI, you would still know your box."

Operational Flexibility

While the IMS framework provided operational discipline, vaccination teams and their task team leaders enjoyed a significant degree of operational autonomy when it came to on-the-ground decisions, so long as such decisions were congruent with ORI's core principles (e.g., ensuring the safety of team members, following the best practices of vaccine delivery, respecting Indigenous autonomy, etc.). Every task team leader we interviewed shared that this on-the-ground autonomy and flexibility was essential to address the unpredictability of remote vaccine provision.

The goal of the IMS, as one mission leader noted, is "about empowering your team rather than micromanaging it." Another leader remarked, "The sense I got is that people on the ground were

entrusted to make decisions on the fly. [We] were guided by an overarching set of principles and priorities, but [we] could make our own decisions."

For example, during one mission, a task team leader brought 120 doses of the vaccine into a community, but by midday, only 20 doses remained. Confident the team could deliver more vaccines to the community that day, they contacted the operations section chief and the incident commander, as required by the IMS command structure. The senior administrators of ORI immediately liaised with both the logistics section and the air operations branch to ship out a second batch of vaccines. As a result, over 200 people were vaccinated that day.

Training

The urgency for COVID-19 vaccines had a significant impact on the instructional training. Ornge provided a total of 42 days of training to eight base locations across the province. Given the short time frame and limited number of full-time staff, Ornge relied on healthcare workers from other organizations to carry out the ORI campaign. All external staff and Ornge employees went through "just-in-time" training, where relevant information was conveyed to trainees immediately prior to their deployments. For every week-long deployment or mission, vaccination team members arrived at one of three staging areas (typically a hotel located in Timmins, Thunder Bay, or Sioux Lookout) on the Saturday before, attended an eight-hour in-person training on Sunday, and were then deployed to their assigned communities on Monday.

During the Sunday training sessions, instructors shared best practices for air travel safety, protocols and procedures for delivering vaccines in the harsh winter conditions, and the command structure outlined by the IMS. Team members also completed an extensive multi-hour, online training program, which provided additional instructions on the IMS structure and roles assigned to each team member; guidelines for vaccine storage and delivery during the deployment; documentation protocols and practices; the use of various electronic aids in the field, including two-way radios, GPS tracking/messaging (specifically, Garmin In-Reach), and satellite phone communities; and cultural safety training.

Cultural Safety Training

The Nishnawbe Aski Nation (NAN) articulated 12 guiding operational principles that informed Ornge's cultural safety training program. Cultural safety for Indigenous peoples was a key priority in the operational principles. As part of the mandatory onboarding training, all ORI participants were required to complete the Ontario Public Service (OPS) Cultural Competency Training, delivered through the San'yas Indigenous Cultural Safety Training Program.

Informed by critical race theories and anti-racist pedagogy, the Indigenous-led and Indigenous-developed San'yas training aims to increase the trainees' awareness of deep-seated biases and develop their competency in working with Indigenous peoples through positive partnerships. In this context, cultural safety can be understood as the process of providing safe and equitable health services to Indigenous people based on a relationship of trust and respect, as well as a recognition of the histories of colonial power asymmetries inherent in the modern healthcare system.[13] An evolving concept, to be sure, the main principles of cultural safety include: a focus on health equity; cultivating a critical form of consciousness beyond just competency; recognizing power relationships and inequities

13 Elana Curtis, Rhys Jones, David Tipene-Leach, Curtis Walker, Belinda Loring, Sarah-Jane Paine, and Papaarangi Reid, "Why Cultural Safety Rather Than Cultural Competency Is Required to Achieve Health Equity: A Literature Review and Recommended Definition," *International Journal for Equity in Health* 18, no. 1 (2019): 1–17.

within healthcare interactions; and aligning with existing local systems and practices. Critically, only those receiving health services can determine if cultural safety has been achieved in healthcare delivery, thus empowering Indigenous patients.

Integral to the provision of culturally safe health care to Indigenous communities is a deep understanding of the lack of health care, historically, in residential schools and child welfare systems, the pervasive disrespect for Indigenous people's health and wellness, and the overall discrimination many Indigenous communities historically faced — and continue to face — from healthcare workers. Cultural safety training acknowledges that this history persists in the current entrenched power structures, and continues to undermine the role of Indigenous peoples "as partners with healthcare workers in their own care and treatment." Thus, culturally safe practices actively seek to not "diminish, demean or disempower the cultural identity and well-being" of Indigenous individuals in the delivery of health care.[14]

Cultural *safety* training (in contrast to more general cultural *competency* training)[15] is not simply about navigating but challenging the entrenched power imbalances that have resulted from centuries of colonialism and racism. For instance, in medical training contexts, cultural safety training directly calls on medical personnel to consider their individual role when it comes to Indigenous reconciliation and how they must actively contribute to the resurgence and resilience of Indigenous communities, rather than seeing themselves as simply delivering a service.[16]

Cultural safety training has been among the most publicly discussed aspects of Ornge's community-based operations, and appropriately so.[17] One Ornge staff member noted during our interview that the inclusion of cultural safety training was part of a wider set of measures intended to transform the mindset of vaccinators. Rather than positioning themselves as health professionals and medical experts, for instance, vaccinators and ORI team members were taught to understand that they were guests in Indigenous communities.

Indigenous leaders provided guidance, insisting that cultural safety training be a necessary precondition for healthcare providers involved in executing ORI. Although cultural safety training required a considerable time commitment (eight to ten hours) for ORI staff and volunteers, the ORI leadership, following directions from Indigenous leaders, considered the training to be mandatory.

Despite the training being compulsory, our interviews revealed some frank and critical assessments of the cultural safety training's effectiveness. One interviewee noted that while the cultural safety course reflected a concerted effort by ORI to centre the needs of Indigenous recipients and their contexts, anti-Indigenous racism remains deeply ingrained in many Canadians, including among healthcare workers.

14 Simon Brascoupé and Catherine Waters, "Cultural Safety: Exploring the Applicability of the Concept of Cultural Safety to Aboriginal Health and Community Wellness," *International Journal of Indigenous Health*, 5, no. 2 (2009): 6.

15 "The Child Welfare League of America defines cultural competency as 'the ability of individuals and systems to respond respectfully and effectively to people of all cultures, classes, races, ethnic backgrounds, sexual orientations, and faiths or religions in a manner that recognizes, affirms, and values the worth of individuals, families, tribes, and communities, and protects and preserves the dignity of each.'" Cultural Competency, Child Welfare Information Gateway, Children's Bureau.

16 Donna Lee Marie Kurtz, Robert Janke, Jeanette Vinek, Taylor Wells, Pete Hutchinson, and Amber Froste, "Health Sciences Cultural Safety Education in Australia, Canada, New Zealand, and the United States: A Literature Review," *International Journal of Medical Education* 9 (2018): 271–85.

17 See Logan Turner, "'Operation Remote Immunity' Ramps Up As Ornge Prepares to Vaccinate 31 Fly-in First Nations," *CBC News*, January 19, 2021; "Vaccination Efforts Accelerate Across Ontario's Northern Fly-in Communities," Ornge Media, February 1, 2021; Donna Sound and Alexandra Mae Jones, "'Operation Remote Immunity' Kicks Off, Bringing Vaccines to Fly-in Indigenous Communities in Ontario," *CTV News*, February 1, 2021.

"You cannot change that [racism] in just a few weeks of training," the interviewee said. They went on to note that "there were many instances of casual racism throughout the implementation of ORI. Every Indigenous person was in some way upset" after the delivery of vaccines.

Scholars offer a similarly critical perspective. The cultural safety approach has a tendency to reduce otherwise "diverse and vibrant cultures … to a singular and monolithic representation." Scholars and activists also contend that "focusing primarily on culture also places an unfair onus on Indigenous Peoples to educate non-Indigenous Peoples, and it locates the 'problem' within cultural differences and not white supremacy."[18]

Despite its shortcomings, many interviewees noted that cultural safety training was nonetheless a genuine and deliberate effort by Ornge and other ORI partners to protect Indigenous recipients from harmful stereotypes, mitigate casual racism, and address the historical violence that non-Indigenous medical professionals have unleashed on Indigenous communities for many generations. From the point of view of non-Indigenous health personnel, cultural safety training was critical for them to feel better prepared to enter the community. As Billie Allan and Janet Smylie observe, such training offers a promising, if imperfect, way forward when it comes to critically examining non-Indigenous peoples' roles in extending basic and life-saving medical treatments to disenfranchised Indigenous populations, particularly in remote communities.[19]

Indigenous Leadership

The Truth and Reconciliation Commission of Canada, in its 94 calls to action, made clear that Indigenous leadership was and will be vital to reconciliation efforts. Policymakers must enlist Indigenous leaders to advise, and ideally co-lead where possible, on health initiatives serving Indigenous peoples and communities. Including Indigenous leaders and their perspectives repents for the historical oppression and violence that Indigenous peoples in Canada have faced, while ensuring that Indigenous input is integrated into all health programs aimed at serving Indigenous people and their communities.[20] ORI is an example of Indigenous participation in the instigation, planning, and implementation of a public health campaign.

According to all the stakeholders we interviewed, Indigenous leadership was central to ORI. During the early stages of Ontario's vaccine rollout in late 2020, Indigenous leaders were integrated into the government's Vaccine Distribution Task Force, the province's main decision-making table. Indigenous government officials such as Shawn Batise assumed leadership roles in the vaccine rollout effort and were an integral voice in the decision-making conversation as early as December 2020.

During those initial discussions, Deputy Minister Batise and other Indigenous leaders provided their points of view regarding vaccine provision in remote Indigenous communities. They were persuasive advocates and played a critical role in encouraging health officials to prioritize remote Indigenous communities in the provincial vaccine rollout. They also conveyed the culture, landscape, and other aspects of the communities involved in ORI.

In line with the Truth and Reconciliation Commission's calls to action, local Indigenous health

18 Kristin Burnett, Chris Sanders, Donna Halperin, and Scott Halperin, "Indigenous Peoples, Settler Colonialism, and Access to Health Care in Rural and Northern Ontario," *Health and Place*, 66 (2020): 8.

19 Billie Allan and Janet Smylie, "First Peoples, Second Class Treatment: The Role of Racism in the Health and Well-being of Indigenous Peoples in Canada," discussion paper (Wellesley Institute, 2015), 2.

20 "Truth and Reconciliation Commission of Canada: Calls to Action," Report, December 2015.

authorities were enlisted to assist in co-leading the vaccination efforts in remote communities. For example, the involvement of Lynne Innes, the CEO of WAHA, was especially critical for the rollout of ORI. From the beginning, she and Ornge's Homer Tien worked closely together to establish the operational aspects of ORI. Through continuous and open dialogue, WAHA shared its concerns with the Vaccine Task Force.

Within the WAHA community, Innes, a registered nurse and community leader, played a significant individual role in promoting uptake within her communities prior to the arrival of the ORI vaccination clinics. During the days leading up to community vaccine clinics, for instance, Innes personally met with local Indigenous leaders and chiefs to ensure that community members were on board and educated about vaccines. She also travelled with vaccination teams when they went to Indigenous communities to encourage local leaders and their communities to be vaccinated. Interviewees noted that vaccine hesitancy among Indigenous communities was not as severe as many initially expected, in part, they contend, because of the pivotal role that Lynne Innes and other Indigenous leaders played in personally encouraging vaccination and demonstrating vaccines to be safe.

Task team leaders from ORI emphasized the positive impact that nonmedical community leaders, such as chiefs, had on vaccination uptake in Indigenous communities. Indigenous leaders worked closely with ORI vaccinators to encourage community members to go to the clinics, to ask questions of the medical staff, and to get vaccinated. ORI team leaders also established personal relationships with community leaders, which was critical to building trust in the run-up to and throughout the vaccine campaign.

Task team leaders recounted how they established cooperative relationships with the Canadian Rangers (part-time members of the Canadian Armed Forces operating in Northern Ontario) to address staffing challenges. Enlisting the Rangers' support was an ORI decision, though local leaders were consulted and each band chief and local councils were empowered to decide if Rangers would enter their communities. Because 95 per cent of Rangers in the region identify as Indigenous, their participation was significant. Collaboration between ORI and the Canadian Rangers positively affected the vaccine rollout to remote northern Indigenous communities because the Rangers were able to assist with transportation, mobilizing resources, and organizing local communities before and during the vaccination clinics.

> "If the operation failed its promise to Indigenous communities and harmed them as opposed to helping, volunteers and Ornge employees got to go home. For Indigenous leaders who live, work, and raise families in these communities, the social and political impacts of an operation gone wrong were much more palpable."
>
> — Lynne Innes

Community Engagement and Trust

ORI's mandatory cultural safety training program established an important baseline with respect to cultural knowledge and culturally safe practice for ORI healthcare personnel, regardless of their previous experience in working in Northern Ontario and with Indigenous communities. Such training was also critical in fostering trust among the various stakeholders involved in planning and executing ORI.

For instance, trust building among members of each vaccination team was critically important,

especially given that many of the teams were made up of volunteers who were strangers to each other. Reflecting the IMS framework, teams were organized with defined roles for each team member, which fostered relationship-building opportunities among them. In addition to their day-to-day work and team gatherings, the teams participated in regular challenges and competitions to increase motivation and improve morale. Task team leaders recounted how they competed with other vaccination teams, for example, to reduce vaccine waste and encourage more efficient targeting, effective outreach, and vaccine delivery in communities.

Trust was also required between members of local Indigenous communities and the non-Indigenous vaccination teams in order to mitigate suspicions and anxieties about the effectiveness of COVID-19 vaccines. Trust-building processes required time, effort, and authenticity.

Task team leaders and vaccinators shared personal accounts of when they interacted with a vaccine-hesitant community member, for example, and took the time to sit with the individual to listen to their individual stories and stories of their community. Regardless of the individual's final decision to be vaccinated or not, the conversations contributed to mutual understanding and personal trust between individuals.

Ornge positioned itself as a supporting rather than commanding organization, ensuring that WAHA and Indigenous community leaders collaborated when it came to operational decision making. This reflected ORI's efforts to form a *co-led* partnership with Indigenous leaders, an intentional community-first approach. ORI and its operational lead, Ornge, ensured that community leaders were integral actors and decision makers, prioritizing NAN's 12 guiding principles from the very start of the ORI planning process.

Indigenous leaders of NAN and WAHA consulted their local communities to identify specific needs and conveyed this to vaccination teams. Local Indigenous leaders coordinated and assigned key roles, such as the local Indigenous vaccination site leader, drivers, support for Rangers, and local translators. Indigenous organizations launched targeted communication campaigns in Indigenous languages to increase community awareness about vaccines and to combat misinformation. Local leaders facilitated door-to-door campaigns, the use of social media platforms such as Facebook Live, and the proliferation of information about the vaccine campaigns via community radio programs in local Indigenous languages.

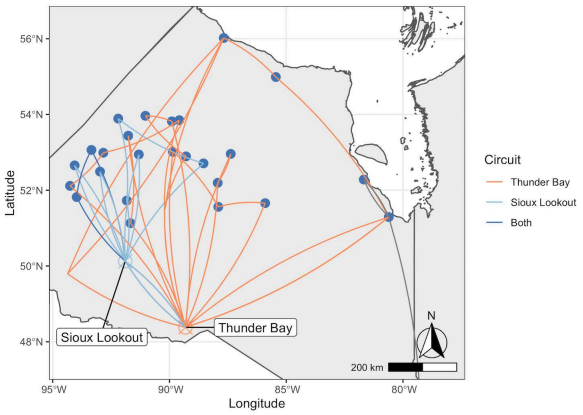
What ORI Accomplished

Operation Remote Immunity (ORI) is an example of a public health intervention executed to reach hard-to-reach Indigenous communities in Ontario. ORI provisioned vaccines to 31 remote First Nations communities in Nishnawbe Aski Nation (NAN), delivering nearly 25,000 doses of COVID-19 vaccines by June 2021. The third and final ORI operation resulted in 9,700 more individuals being vaccinated. Pediatric doses were also administered throughout the three phases of the campaign.

ORI was rolled out in an urgent and high-stakes context. In our interviews with ORI stakeholders we frequently heard them refer to the sheer size and scale of the operation, the urgency of getting vaccines out as quickly as possible, and the political stakes involved, especially if the campaign failed to effectively deliver vaccines to remote Indigenous communities in Ontario.

Although the critical care paramedics involved in ORI are accustomed to dealing with patients in emergency circumstances, ORI presented a

distinct challenge with the health and socio-political impact of the vaccine campaign. Considering the geographical remoteness and the lack of adequate infrastructure in northern Ontario Indigenous communities, interviewees emphasized how devastating the pandemic could be from a population health and healthcare perspective. Furthermore, a failed mission would have been debilitating with respect to future collaborative health initiatives: trust between the various stakeholders would have been squandered.

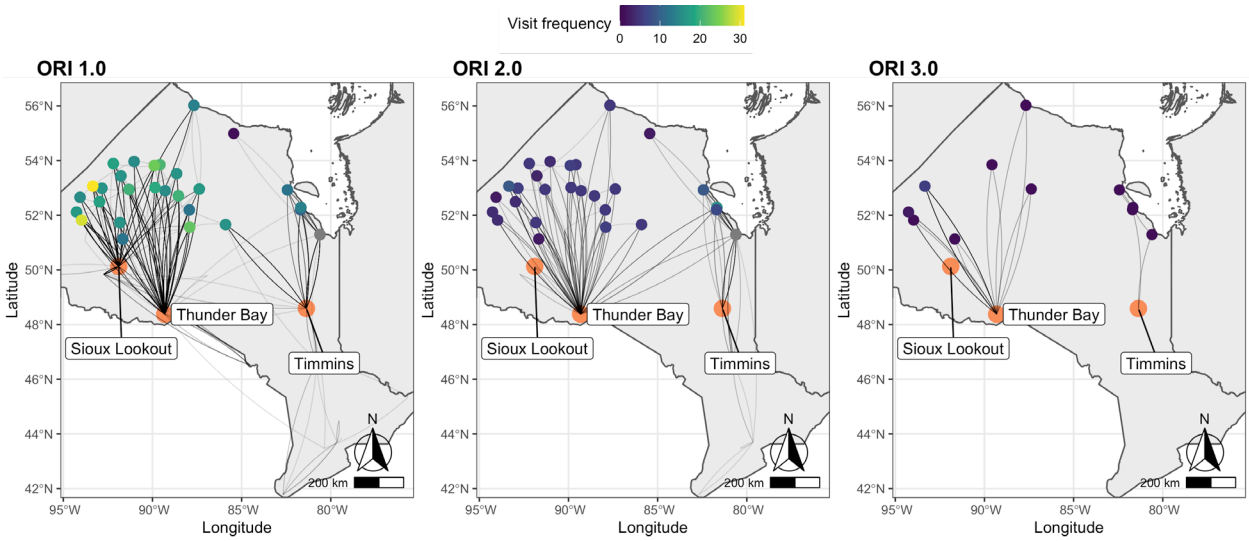


Note: Recce flights tend to originate from either Sioux Lookout or Thunder Bay, two of the medical hubs in Northern Ontario. The blue dots represent remote Indigenous communities whereas the lines connecting the dots represent the flight pattern. The colour of the lines indicates the geographic origin of the Recce flight.

Figure 5. Operation Remote Immunity's recce flights

Operational Metrics

Community leaders established local clinics and practices before the vaccine missions were deployed. Prior to the delivery of vaccines, a team of ORI personnel travelled to and surveyed local sites to verify that all protocols and resources were in place. Ornge deployed 29 reconnaissance (recce) flights prior to delivering on-the-ground campaigns during the ORI 1.0 and ORI 2.0 phases respectively (Figure 5). These recce missions ensured that vaccination teams were familiar with the clinic set-up, allowing them to prepare for logistical uncertainties and improve contingency planning. Recces were, in other words, critical in ensuring preparation and



Note: The three major launch points for community vaccination visits are labelled in orange while the other-coloured points represent the remote Indigenous communities. The frequency of visits for each ORI phase is indicated by the colour of the points while lines joining the points represent flight paths.

Figure 6. ORI's vaccination flights

readiness, a sort of "final check" before the task team arrived.

Operation Remote Immunity recorded more than 800 site visits (or landings). ORI 1.0 accounted for 500 community visits alone, 2.0 accounted for 178, and phase 3.0 comprised 17 additional missions (missions were also deployed between ORI phases; Figure 6). Often, multiple community vaccination visits were made during a single circuit. Larger communities required more visits. For instance, Sandy Lake and Pikangikum, two of the largest communities in northern Ontario, experienced a higher frequency of deployments. The volume of flights and nature of flight deployments speak to the scale and magnitude of operational complexity.

Impact of IMS on Ornge

Ornge is organized along a "command and control" framework and uses the IMS model in its regular operation. However, given the scale and interorganizational collaboration required, Ornge and its partners adapted and implemented a separate IMS framework specifically to execute ORI. Initially, there were redundancies in the jobs performed by Ornge staff in planning the vaccine rollout because many staff members did not fully comprehend the parameters of their specific role in ORI. Interviewees recounted, for instance, moments when staff members, due to unfamiliarity or role uncertainty, took it upon themselves to carry out a task that fell outside their specified role, or conversely, failed to address certain tasks that were theirs to address. The integration of the IMS framework by Ornge was instrumental in defining each staff member's role and their scope of work, resulting in greater operational efficiency.

The IMS was critical for coordinating different organizational roles within Ornge and the various partners involved in ORI, and for streamlining lines of communication between different sections of the operation. Because the introduction of IMS impacted previous command and control practices in Ornge — for instance, in reporting lines and accountability, as well as specific role definition — frank and open conversations were required at the start of the operation to explain the necessity of implementing such a framework.

The recruitment of Ornge staff with Emergency Medical Assistance Teams (EMAT) leadership experience into ORI ensured that Ornge, as the operational leader of the vaccine rollout, swiftly adopted the practices and principles of the IMS framework. In other words, the IMS structure was effectively adapted and ultimately integrated into Ornge and ORI by dedicated, experienced, and qualified staff who were already familiar with both the IMS model and the operational requirements of delivering vaccines to remote communities.

Legitimating Indigenous-led Public Health Initiatives

ORI's long-term impact on public health practices in remote hard-to-reach areas in Ontario remains to be seen. However, interviewees conveyed confidence that the rollout of ORI established an important operational precedent for an Indigenous-led public health initiative.

Most notably, ORI highlighted the deliberate and effective collaboration between key federal and provincial ministries and departments, local health organizations, universities, and other stakeholders. Many interviewees stressed ORI's significance as an example of Indigenous health being prioritized in the government's political agenda. Some characterized ORI as a critical starting point that might strengthen collaborative partnerships between Indigenous and non-Indigenous health leaders into the future. The ORI campaign helped to legitimate Indigenous leadership in advocating, planning, and executing successful public health campaigns.

Lessons Learned

Operation Remote Immunity (ORI) provides valuable insights into developing and implementing more inclusive public health campaigns, and specifically for remote Indigenous communities. Our interviewees, all of whom participated in the operation, emphasized the importance of co-leadership, building trust, and ensuring inclusive representation of Indigenous perspectives in healthcare decision making.

Indigenous co-leadership is especially vital. ORI leaders stressed how important it was to prioritize Indigenous communities' needs and to subsume those needs within the operational aspects of the vaccine rollout. In the case of ORI, co-leadership included integrating the 12 guiding principles of Nishnawbe Aski Nation (NAN), which guided decision making throughout all leadership levels.

Operational experience and expertise were also crucial in delivering health care to remote communities. Vaccine provision to remote communities is complex and uncertain, and this process is further complicated by the urgent and compressed timeline of ORI. To face this challenge, individuals with experience in Ornge and/or Emergency Medical Assistance Teams (EMAT) were chosen to lead ORI, and their experience working in remote Indigenous communities was critical since many medical personnel (such as vaccinators) recruited for ORI came from non-Indigenous backgrounds and had varying experiences (including little to none) working in Indigenous communities.

Planning, training, and preparation were key to implementing the vaccination effort. Predeployment training sessions ensured that the vaccination teams were well informed prior to arriving in communities. Recce missions generated on-the-ground "intel" and insights into each community, which provided operational guidance to Indigenous community leaders who had already begun preparing local vaccination clinics. The IMS framework, the organizational model that ORI adopted, enabled the vaccination team leaders to efficiently make operational decisions on the ground. This included equitably distributing vaccines, communicating with community members and leaders to increase vaccine uptake, and minimizing vaccine waste. Extensive training in logistics and vaccine delivery, along with continued practice among staff and volunteers, were critical in ensuring equitable vaccine distribution.

Cultural safety training for ORI staff and volunteers was critical to the operation. Indigenous volunteers and participants emphasized the significance of cultural safety training that provided non-Indigenous individuals with knowledge about Indigenous cultures and experiences. Cultural awareness and training are key to building trust.

During our interviews, however, some revealed that negative stereotypes about Indigenous peoples periodically surfaced among members of the vaccination teams. They also acknowledged that ORI leaders made concerted efforts to combat anti-Indigenous racism, which were generally successful and much appreciated. Despite genuine efforts to mitigate anti-Indigenous racism, eradicating such discrimination and ignorance in the Canadian healthcare system will require enduring, long-term solutions.

Limitations

A limitation of this case study is the lack of data on ORI's cost structure, specifically the cost of vaccine delivery per capita. Given the remoteness of northern Indigenous communities, we would anticipate a high cost per vaccination, factoring in transportation expenses, staff and personnel, and diseconomies of scale. Unfortunately, cost data were challenging to obtain. In designing future public health campaigns like ORI, policymakers

and implementers should examine the economics of remote vaccine provision and determine ways to reduce operational costs while respecting Indigenous communities' needs and guiding principles.

Another limitation to this study was our inability to accurately assess the number of community members eligible for vaccination. While the example of ORI offers operational insights into executing a complicated public health campaign in remote fly-in Indigenous communities, we are cautious about calling the operation a "success" without a clear assessment of the vaccination *rate*. Despite concerted attempts to determine the "denominator" (i.e., the number of eligible people to be vaccinated), our research team was unable to calculate the vaccination rate from existing reports and stakeholder interviews.

As we noted earlier, the research team was unable to conduct interviews with Indigenous leaders in WAHA. We consulted extensively with the WAHA research ethics council about our research ethics protocol throughout the summer and fall of 2022. The project received WAHA ethics council approval in late fall 2022. The research team was unable to conduct fieldwork in WAHA.

As a result, the focus of this report is limited to the operational aspects of ORI reported in the secondary literature and conveyed to us during interviews with ORI stakeholders and leaders. Moving forward, we propose to revisit many of the key themes developed in this report with WAHA's leadership team who were involved in ORI as well as the chiefs of the six James Bay Communities: the Town of Moosonee, Moose Factory, Fort Albany First Nation, Attawapiskat First Nation, Weenusk First Nation (Peawanuck), and Kashechewan First Nation.

Research Team

Shanice Burton is a third-year student studying peace, conflict, and justice studies, philosophy, and equity studies. She has experience in community organizing and activism and is passionate about health equity policy.

Ella Hartsoe is a graduate of the Master of Global Affairs program, interested in human rights, Indigenous studies, and law. She hopes to use her past research in comparative politics and governance to contribute to studying policy.

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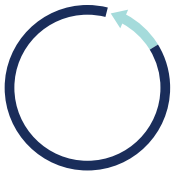
Avril Wang is a fourth year student studying microbiology and evolutionary biology. She is hoping to use her background in mathematical modelling and passion for public health to better understand the logistical success of ORI.

Joseph Wong is the University of Toronto's vice-president, international. He is also the Roz and Ralph Halbert Professor of Innovation at the Munk School of Global Affairs & Public Policy, and a professor of political science. He was the director of the Asian Institute at the Munk School from 2005 to 2014, and held the Canada Research Chair in health, democracy, and development for two full terms from 2006 to 2016. Professor Wong is the founder of the Reach Alliance.



Reach Alliance

Founded at the University of Toronto in 2015, with support from the Mastercard Center for Inclusive Growth, the Reach Alliance has since scaled to seven other leading universities around the world. As a student-led, faculty-mentored research and leadership initiative, Reach's unique approach uncovers how and why certain programs are successful (or not) in getting to some of the world's hardly reached populations. Research teams, comprised of top students and faculty from across disciplines, spend nine to twelve months investigating each case study. Once the data collection process is complete, teams write case reports that are published and disseminated across the Reach Alliance's diverse network of policymakers, practitioners, academics, and business leaders.

Inspired by the United Nations' call to eliminate global poverty by 2030 as part of a set of Sustainable Development Goals (SDGs), our mission is to pursue the full achievement of the SDGs by equipping and empowering the next generation of global leaders to create knowledge and inspire action on reaching the hardest to reach.

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