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How Language Shapes Change: Perspectives on the Most and Least Effective Communication Strategies and Tactics during the COVID-19 Pandemic

Contributions: Karen S. Palmer, Elisabeth Bélanger-Hardy, Kristina Kokorelias, Susan Law

Executive summary

This perspectives brief presents some of the limited available evidence—from published literature and experts' perspectives—on the most and least effective communications strategies and tactics used by public health and government to prevent and control community (i.e. non-hospital) infection during the COVID-19 pandemic, including uptake of testing, tracing, vaccination, masking, and air quality mitigation. We summarize lessons learned about how to improve communications, drawing from both the published literature and from key informant interviews with communications scholars and/or practitioners in Canada and other jurisdictions.

Question

This brief addresses two broad questions:
1. **Globally, what have been the most and least effective communications strategies and tactics used by public health and government to prevent and control community (i.e., non-hospital) infection during the COVID-19 pandemic, including uptake of testing, tracing, vaccination, masking, and air quality mitigation?**
2. **What lessons have we learned about how to improve communications during a pandemic?**

Summary of lessons learned to improve public communications during a pandemic.

The following is a summary of the 'lessons learned' from the literature and from the key informants with whom we consulted.

Q1. What communications strategies and tactics have been the most effective during the pandemic?

The most effective communications use holistic approaches that combine facts with framing, put values before facts, are customized to specific audiences, and are simple, clear, authentic, empathic, frank, and creative.

- Holistic communications were most effective when they combined facts with framing that was customized to specific audiences.
- Effective communications put values before facts.
- Trust is relational; communications contributed to building trust when they were authentic, empathic, frank, and creative.
- Simple and clear messages were most effective.
- Communications led by civil society were some of the most effective.

Q2. What communications strategies and tactics have been the least effective during the pandemic?

The least effective communications lacked transparency, sustained command-and-control messaging for too long, used words that mean different things to different people, failed to effectively communicate uncertainty, politicized public health, confused audiences about who is in charge, and eroded public trust.

- When there was lack of transparency—by not communicating the unvarnished truth—this undermined public trust.
- Command-and-control crisis communications cannot be sustained when a situation becomes chronic.
- A word can mean different things to different people; language shapes change.
- All science has uncertainty; nearly all countries did a poor job of communicating uncertainty.
- Politicization of public health harmed the credibility of official communicators.

- Canada's division of powers enabled disunited and conflicting communications that confused and alienated the public.
- Poor communication about the regulatory process for vaccine approval eroded public trust.

Q3. What communications strategies enabled the COVID-19 infodemic through the spread of dis-information, mal-information, and mis-information?

The infodemic was enabled by a lack of transparency, polarization of science communications, failure to effectively communicate uncertainty, and lack of timely official communications that created an information void filled by conspiratorial messengers.

- "Just trust us" is not considered an effective communication strategy.
- Polarization in science communications calcifies everyone.
- Uncertainty breeds misinformation; failure to effectively communicate about uncertainty helped fuel conspiratorial thinking and the infodemic.
- Lack of timely official communications created a void that enabled conspiratorial communications.

Q4. What did conspiracy theorists do well in terms of COVID communications that allowed them to gain traction?

Conspiracy theorists gained traction through simple, persuasive, language that offered certainty where none existed.

- Conspiracy communicators used persuasive, simple language; they 'get' their audience.
- Conspiracy theorists offered certainty where none existed.

Q5. Which communications strategies can help to combat dis-information and the COVID-19 infodemic?

Communications strategies that can help combat the infodemic include providing better information, social listening to expose and pre-emptively counter misinformation, appeals to hope rather than fear alone, and radical transparency to build trust.

- Providing better information—by explaining the evidence and reasoning that is guiding decisions—helps counter misinformation and disinformation.
- Social listening is an effective technique to track, analyze, and expose concerns, sentiments, rumours, and misinformation so that it can be quickly countered.
- Explaining threats and offering hope is more effective than appealing to fear alone.
- Prebunking—pre-emptive refutation—helps to inoculate against conspiratorial thinking.
- Radical transparency in communications builds trust and helps prevent conspiratorial thinking.

Q6. To what extent did governments and government-affiliated public health teams work with communications experts to hone messaging and messenger?

Public science communications is a team sport, yet there appears to have been insufficient consultation between governments and communications scholars/practitioners whose expertise might have helped reconcile the tension between medical ethics and public health ethics that resulted in conflicting messages.

- Effective public science communications is a team sport requiring diverse expertise and a multi-disciplinary team-based approach.
- Communications scholars and experts outside government were rarely consulted or embedded.
- The creative advertising industry could have helped with campaign messaging but was not at the table in Canada; elsewhere the industry more engaged.
- Tension between medical ethics and public health ethics complicated communications, raising questions about who is best suited to be a trusted public messenger.

Q7. What could governments do now in terms of communications to help prevent and control infection and enable our collective recovery?

Canada needs a national evidence-based public health communications strategy to help rebuild trust, swiftly counter misinformation and disinformation, and prepare for the emergence of collective grief; this strategy can be enabled by investment in robust public health and primary care systems and supported through strong policies, regulations, and operational solutions to help normalize protective public health measures.

- Canada would benefit from a national communications strategy for public health.
- Communications needs to be 'radically transparent' to rebuild trust in government.
- Misinformation and disinformation must be swiftly countered.
- Governments need to recognize that one size does not fit all when it comes to communications and must account for audience diversity.
- Public communicators need to anticipate and prepare for the emergence of our collective grief and be mindful of that in messaging.
- Establishing a truly independent public health agency at the federal/national level would enable better public health communications.
- Communications, alone, cannot effect change going forward; governments also need strong policy, regulations, and operational solutions to help normalize protective public health measures.

Limitations

This report is not a comprehensive analysis of the impact that different communications strategies had on public health outcomes. This type of impact analysis would require efforts to understand how various communications approaches affected key outcomes of interest, such as uptake of testing, tracing, vaccination, masking, air quality mitigation, and concomitant rates of infection, disability, and death from COVID-19. Future undertakings of this nature will help us understand whether/why/how communications effected public health outcomes during the pandemic.

Instead, we report only what we learned about pandemic communications from the experts we interviewed—communications scholars and/or practitioners—and from the limited peer-reviewed evidence retrieved via a rapid review of the literature. The scope of the interviews did not include those working in communications within provincial or federal governments. Our key informants were in Canada, Australia, and Switzerland, and some have followed pandemic communications globally. Their expert opinions are rooted in scholarly evidence and/or decades of experience so their perspectives may be generalizable. The strength of this qualitative approach to our questions, in the face of limited published evidence, has provided insights that "…touch the core of what is going on rather than just skimming the surface." [1] As such, though we urge some caution in interpretation, we suggest it is reasonable to consider our findings when crafting communications policies and plans going forward in the COVID-19 pandemic and in future pandemics.

Introduction

Effective communications about the COVID-19 pandemic have been challenging. It's hard enough to communicate information about a known threat, but it's a whole other level when the threat is a novel virus with the potential to affect all people worldwide.

As we inch toward a post-pandemic world, this report offers insights from communications experts—scholars and/or practitioners—in Canada and elsewhere about the art and science of public communications generally, and about pandemic communications specifically.

We describe public communications approaches used during the COVID-19 pandemic, with examples from Canada and internationally, addressing two questions:

1. **Globally, what have been the most and least effective communications strategies and tactics used by public health and government to prevent and control community (i.e., non-hospital) infection during the COVID-19 pandemic, including uptake of testing, tracing, vaccination, masking, and air quality mitigation?**
2. **What lessons have we learned about how to improve communications during a pandemic?**

"Effective communications are essential in the short-term for uptake of public health measures like face coverings. But they matter more over a longer time horizon, whether to forestall compliance fatigue, lay the groundwork for vaccine uptake, or encourage the public to engage pro-actively with the healthcare system for concerns unrelated to Covid. They also matter for cultivating trust among citizens and their governments—trust that is critical for the future stability of democratic institutions." [2]

Methods

To inform our understanding of the effectiveness of communications during the COVID-19 pandemic we relied mainly on key informant interviews given that published peer-reviewed evidence is still limited.

Between August 25 – September 28, 2022, we undertook 60-minute, one-on-one, semi-structured, Zoom interviews with 11 key informants, both in Canada and globally. We selected these informants for their expertise— scholarship and/or professional practice—in the art and science of communications (Appendix 1: Consultants). Some key informants are authors of published works that we read prior to conducting the interviews and others are evidence-informed expert communications practitioners. We did not interview communication leads working inside federal or provincial governments or those who served as public communicators on behalf of those government; the focus was to solicit reflections about public communications from experts primarily outside government.

Our Interview Guide included 11 questions about the effectiveness of public (government) communications and lessons from the pandemic experience, though we also asked key informants to provide any insights that were not addressed by these questions (Appendix 2: Interview Guide). The interviews produced 11 hours of recordings and 220 pages of transcripts. We systematically analyzed these qualitative interview data to identify key themes/patterns of meaning and then abstracted key informants' quotes representative of these themes/patterns. Where we quote the key informants, we anonymized their responses by assigning each expert a number that does not correlate to the order in which their names appear in Appendix 1. Validation procedures included triangulating to corroborate or refine our findings, seeking disconfirming evidence, and member checking with key informants to invite their confirmation of accuracy and resonance.

We also undertook an evidence scan to search for academic and gray literature on the most and least effective communications strategies and tactics used by public health and government to prevent and control community infection during the COVID-19 pandemic. We specifically searched for evidence on communication strategies related to the uptake of testing, tracing, vaccination, masking, and air quality mitigation as methods of control and prevention (Appendix 3: Sources and Sample Search Strategy). We searched the following five databases: Communication & Mass Media Complete [EBSCOHost],

PUBMED, Global Index Medicus, Lit COVID, and the Canadian Institute for Health Information [CIHI] data base. We used text words and, whenever possible, subject headings to ensure consistency across search platforms and in results. We conducted a search of non-indexed and grey literature through Google Scholar and hand-searched the reference lists of selected sources. For each search, wherever possible, we applied a date limitation starting December 1, 2019, to focus results to those reflective of the COVID-19 pandemic.

KSP conducted key informant interviews; acquired, analyzed, and interpreted interview data; synthesized literature; and wrote report. EBH assisted with key informant interviews and thematic analysis; and reviewed the report. KK conducted literature review and reviewed the report. SL critically reviewed the report.

Limitations

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Instead, we report only what we learned about pandemic communications from the communications experts we interviewed—communications scholars and/or practitioners—and from a rapid review of the literature. The scope of the interviews did not include those working in communications within provincial or federal governments. Our key informants were in Canada, Australia, and Switzerland, and some have followed pandemic communications globally. Their expert opinions are rooted in scholarly evidence and/or decades of experience so their perspectives may be generalizable. "By its very nature, qualitative research is non-standard, unconfined, and dependent on the subjective experience of both the researcher and the researched. It explores what needs to be explored and cuts its cloth accordingly." [1] The strength of qualitative research "lies in validity (closeness to the truth)—that is, good qualitative research…really should touch the core of what is going on rather than just skimming the surface." [1] As such, though we urge some caution in interpretation, we suggest it is reasonable to consider our findings when crafting communications policies and plans going forward in the COVID-19 pandemic and in future pandemics.

Results

Evidence on the relative effectiveness of pandemic communications is only now beginning to emerge in the published literature. Our search produced only 41 results. The published literature on pandemic communications consists mainly of now-dated studies reporting on earlier periods in the pandemic which are often specific to a single jurisdiction or single issue (e.g. misinformation, 'infodemics', social media influences, metrics for measuring engagement, polarized sociopolitical environments, risk management, emergency management, transparency, trust, authenticity, vaccine acceptance/hesitancy) along with various reports, blog posts, and editorials on these and other topics related to communications. We incorporated this evidence where relevant, but little of the experience and wisdom we gleaned from the key informant interviews is yet represented in the published literature. Consequently, we mostly relied on insights from the key informants we interviewed rather than on the published literature. We used representative quotes from these key informants to weave together the story of pandemic communications—what worked and what didn't—from their perspective. We selected quotes that represented convergence of information from more than one key informant; we did not select quotes that represented one-off opinions. (See Appendix 4: Summary of Lessons for Improving Communications during a Pandemic.)

General impressions of key informants about the effectiveness of pandemic communications

We asked key informants about their general impressions of the effectiveness of public health and government communications during the pandemic. They all said, in one way or another, that effectiveness has varied throughout the pandemic, and that official communications have often missed the mark in Canada and elsewhere. The quotes below illustrate these sentiments.

"What has gone well, and where it has gone well, has changed over the life cycle of the pandemic. What Canada has done well—but may have over time become a vulnerability— was that it has been very clear who was leading the public health communication efforts. Federally, it was the Prime Minister and Dr. Tam, and in the provinces and territories it was mostly the Chief Public Health Officers, or sometimes Premiers. But over time, as political priorities became more significant, the tension—between those elected voices and the appointed public health voices—surfaced and became more audible. As that happened, we saw the decline of public support for public health measures. As elected officials began to contest with public health leaders as the steering voice, we began to see a fraying of public support. Whether that was owing to the temporality of the pandemic (the longer it went on, the more imposition on our lives) or to that political conflict is an interesting question. I think it's probably a little bit of both." **(Key Informant #7)**

"Early on, it was easier to craft more persuasive messaging because there were fewer pre-conceptions about the science, since most folks hadn't seen this kind of global scale of disease spread before. Over time, there has been more scientific discourse in the public, but also a lack of science literacy, so there's been confusion about what it means when the science keeps changing. That's where bad faith actors could capitalize and spin that, and public communications didn't address that enough." **(Key Informant #5)**

"Many of the Canadian governments' communications struggles (whether federal or provincial or territorial) were true of many other governments around the world. They had difficulties communicating how scientific inquiry occurs—not really attempting to do that in any meaningful way—not being able to communicate when things changed, a lack of institutional capacity for communications, trouble communicating on social media, and trouble reaching the diversity of the population. The vast majority of the public doesn't know how scientific inquiry functions. They don't know how peer review works, or what's a pre-print. Establishing a meta-framework of how scientific inquiry works would have been essential to avoid the accusations of flip-flop aimed at everyone. That's where the conspiracy theories took flight. The communication around the airborne nature of COVID and around vaccine efficacy has been especially poor, though some countries did better than others." **(Key Informant #10)**

"I am a true believer that public communications often doesn't stand alone, and that there are operational difficulties happening in the background that can lead to bad or inconsistent communications. For example, at the beginning of the pandemic I was impressed with how quickly our various governments came together, cooperated, and held daily press conferences to inform the public. But what was really frustrating from a communications point of view were the mixed signals. First, we were told we didn't need masks. Then we only had to wash our hands. Then we needed masks. It was conflicting to the public and that threatened trust because the messages were communicated with such certainty rather than, 'We don't know. This is what we believe today but it will likely change.' Uncertainty wasn't communicated and that eventually led to distrust." **(Key Informant #8)**

"It was really evident to me that the information being communicated was at a level that was too hard for the public to digest. I remember watching the briefings and feeling like people are just not going to get it. A lot of people either don't understand or get really uncomfortable with a changing message. People are used to messaging that says, 'If you don't want this to happen, do this.' But what they heard was, 'If you don't want this, maybe don't do this, or maybe do this instead.' It was too complicated and too much information. That spooks people. They don't want to see how the sausage is made; they just want it to

show up on their plate. In their effort to be transparent, it was too transparent, and the messengers confused the public, which led to mistrust. They should have just said, 'We don't know for sure, things will change, but here's what we think you should do today. That is likely to change as we learn more and we'll tell you when it does.' When you admit what you don't know, it builds trust, not fear. That's transparent communication. But it's a balancing act between too much information and too little. It's apparently hard for scientists, doctors, and politicians to admit when they just don't know." **(Key Informant #6)**

"Every country, every institution, did different things, with some similarities. There were two big problems with communications. Too often communications teams were not seen as a valuable partner in the same way virologists, epidemiologists, and public health experts were seen. Comms needed to be at the table and be respected as a professional skill set at the same level – with equal status - as MDs, PhDs, or MS in biological sciences. Related to that, too much of the communications tended to be from technical 'experts.' It originated from them and was driven by them. But when experts communicate from an Ivory Tower and are wedded to their orthodoxies, they can stumble. What you need is a better two-way street between communications experts and scientific/health experts, and, most importantly, two-way communications between institutions and ordinary people. Because sometimes ordinary people can teach experts things. If you talk about masks, or airborne, and you listen to communications people (who tend to be more like lay people, not hard scientists), or you listen to ordinary people on the street, the gut feeling they have about a respiratory disease might be actually more valid than when a scientist looks at the old literature and says they can't find studies about how masks work in a community setting so we can't recommend masking because there's no evidence. But if you're a regular non-science person, it only makes sense that if my saliva is coming into your eyes, or if I'm in a hot steamy bar with a bunch of coughing and talking people, droplets of various sizes would travel or linger in the air. Technical experts need to get out of their Ivory Towers and interact with regular people to understand what's worrying them, what intuitions do they have, and what can they learn from regular people, rather than relying only on previously published scientific reports. Because the world is changing and this is not the last unknown pathogen we will see, and if scientific experts lean on what's known, they're going to always be behind the curve. My whole philosophy of communications has been sharpened because of this: communications needs to be at the table, with equal status to so-called technical 'experts,' and technical experts need to be communicating with humility taking into account the communications expertise." **(Key Informant #9)**

"Nobody has done it [communications] right. There was no strategy – that was really obvious. There were shots of things and bits, but there was a missed opportunity for a collective cohesive approach with a simplistic narrative. The divisive narratives worked and became louder—the anti-vax, anti-mandate—and no government anywhere in the world met the challenge of that battle for our times." **(Key Informant #4)**

"… there is a profound misunderstanding of what the central problem is: The job of public health and government communicators is to assign meaning to information, not merely transmit information. Nearly all governments are making the same kind of collective mistake of just not really understanding what their job is, in terms of public communications, and then not knowing even how to do it if they knew what their job was. This is not specific to Canada; we weren't alone in this. It is a criticism of the entirety of pandemic communications. Opportunities were widely missed." **(Key Informant #2)**

Q1. What communications strategies and tactics have been the most effective during the pandemic?

Q1 Summary of Lessons Learned

- **Holistic communications approaches were most effective when they combined facts with framing that was customized to specific audiences.**
- **Effective communications put values before facts.**
- **Trust is relational; communications built trust when they were authentic, empathic, frank, and creative.**
- **Simple and clear messages were most effective.**
- **Communications led by civil society were some of the most effective.**

Few scholars or organizations have evaluated, measured, and published reports on effectiveness in communications, at least not yet. Impact measurement will likely be an ongoing project for years to come. Key informants we interviewed offered their impressions of the communications strategies they perceived to be effective.

Holistic communications approaches were most effective when they combined facts with framing that was customized to specific audiences.

Holistic communications approaches were felt to be effective, meaning they combined facts with framing that was customized to specific audiences.

> *"The most effective interventions were holistic in approach, combining the facts and then framing them in a way that was customized to whichever audience they are trying to reach —their values, their needs, and their ability to implement the intervention—rather than a single cookie-cutter message that was just blasted out."* **(Key Informant #3***)*

One Toronto pandemic campaign with the phrase, 'We're in this Together,' did not originate with government but rather was the inspiration of a single Toronto artist, Dreeem, as an homage to a beloved Toronto landmark and discount store famous for its marketing stunts, Honest Ed's. "That place represented a side of Toronto that's really special, hopeful, a sign of community — blind optimism and faith in our neighbours." [3] Hoping to inspire those sentiments and unite Torontonians, the artist created posters with that phrase which appeared on shop doors and restaurant windows.

> "*A glimmer of something done well early on at the very beginning in Toronto was the campaign 'We're in this Together.'* [3] *This was in the direction of something that could have worked. It was the closest to a positive campaign that tried to make wearing a mask a meaningful decision about helping. And then I stopped seeing it."* **(Key Informant #2)**

Effective communications put values before facts.

Other messaging that resonated with some key informants included that of BC's Dr. Bonnie Henry: 'Be kind, be calm, be safe.' Initially, that message was effective because it used the effective communications technique of putting values before facts, thereby targeting peoples' emotions. However, others felt that, over time, that messaging lost steam because it was eventually perceived as trite, dismissive, and no longer trusted. Trust was then further disrupted by a failure to communicate about the extent to which airborne transmission was responsible for disease spread.

> *"Dr. Bonnie Henry's message of 'Be kind, be calm, be safe' was a good instinct because it put 'be kind' first. That put the value before the facts. From communication studies, we know that values target peoples' emotions, and that's what motivates action. Good advertising campaigns often centre on value-based talk, and then the facts come second."* **(Key Informant #2)**

> *"Rhetoricians—[those who focus on the art, logic, and grammar of persuasion]* [4–6]*—always talk about Aristotle's three appeals of ethos-logos-pathos that you need to bring to the conversational space. Ethos refers to ethical persuasion, logos to logical persuasion, and*

pathos to emotional persuasion. But also really important is the affective quality – the empathy to understand how this was affecting the lives of real people. At least initially, Dr. Henry brought all of that together in an effective way, as did Dr. Tam." **(Key Informant #5)**

"Dr. Henry did a good job at the beginning, but then lost everyone part way through. Perhaps that's partly because BC didn't have an independent Science Table. Ontario's independent, voluntary, Science Table enabled someone other than a civil servant to communicate with the public about the disease. I give Ontario's government credit for creating the Ontario Science Table and then getting out of their way, at least initially. Ontario's Science Table was not a public health table, but rather a science table, and their advice helped add context which boosted the legitimacy of government's decisions when they aligned with the Science Table." **(Key Informant #1)**

"When you went to Costco in BC and there were still air ventilators on sale, but all the hand sanitizer was out of stock, you knew the communications had failed. Failed. Because we didn't accept or communicate that it was airborne. It's irrefutably airborne. The reasons that airborne precautions weren't implemented doesn't have to do with the lack of evidence, but rather with internal barriers to which I am not privy, including decisions about where the money goes. That's what makes me so sad." **(Key Informant #10)**

Trust is relational; communications built trust when they were authentic, empathic, frank, and creative.

Key informants identified certain individuals as being exemplary leaders in communications because their messaging style was seen as authentic, empathic, frank, and/or creative.

Some key informants thought that the communications styles of Ontario's Dr. Peter Jüni and of New Zealand's Prime Minister Jacinda Ardern were highly effective because they were authentic. In the communications world, authenticity is about being genuine and sincere. [7] Nova Scotia's Dr. Lisa Barrett was seen as an effective and creative communicator who thought outside of the box. Ottawa Public Health's Twitter feed and their other communications were widely recognized as being authentic, honest, and genuine, with a playful tone and responsive team. Ottawa's Dr. Vera Etches and Prime Minister Trudeau were effective early on, in part because they were empathic, though some perceived their credibility to wane over time. Outside of elected and appointed offices, certain key influential physicians were seen as reliable and trusted arbiters of public information at a time when people really needed it.

"In his communications Dr. Peter Jüni in Ontario acted like a clinician. It felt like he was at Ontario's bedside. He had genuine emotional affect, no question was stupid, and he had patience for every single question. He also made himself relentlessly available." **(Key Informant #1)**

"Everyone talks about New Zealand. Their Prime Minister, Jacinda Ardern, did a really good job of exuding what Kiwi's call 'mateship' (a cultural idiom that embodies equality, loyalty, and friendship [8]). In Ardern's briefings and Facebook Live video-streaming conversations, she had infinite patience, no question was stupid, she acknowledged that your fears are legit, and admitted that she didn't know all the answers but said how they were finding it out. By exposing her own vulnerabilities, with a sense of humour, she gave permission for people to say 'this really sucks.' She didn't tell people to 'buck up.' That speaks to radical transparency in communications, which is really not in the comfort zone for a lot of scientists and physicians." **(Key Informant #1)**

"One of the things that was missing, and which would increase public trust in scenarios like this, was frankness. An admission that 'we don't know,' as opposed to 'it could be this or that or the other thing.' In the public health messaging delivered by doctors, there's a lot of professional accountabilities on their shoulders. I think Prime Minister Trudeau did a good job of saying, 'I don't know, but as soon as I do, I'll tell you.' I think that came across to many as authentic. [Other public communicators, including Health Officers] would have

done better if [they'd] said that. But that's like asking after a car accident what you would have done differently. Well, not get in the accident in the first place. Still, looking in the rear-view mirror is important to learn how to get better going forward." **(Key Informant #6)**

"Two hallmarks of good risk communications are timeliness and empathy. Early in the pandemic some of the most effective spokespersons—in terms of effectiveness, their command of the platforms they had, and the degree to which they communicated timely information and did so empathically—were Dr. Bonnie Henry, Dr. Theresa Tam, Dr. Lisa Barrett, Dr. Eileen De Villa, and Dr. Vera Etches. Other physicians, like Dr. Isaac Bogoch, Dr. Michael Werner, Dr. David Fisman, and Dr. Manaka Pai were all good at public communications because they were empathic and consistent." **(Key Informant #7)**

"Authenticity is important in any public health context. Ontario's Premier Ford and Prime Minister Trudeau are good examples of communicators who do best when they are unscripted, shooting from the hip, and not having to remember what their handlers have told them. Trudeau is most comfortable when he is in the community speaking to Canadians directly. That is where he really soars as a communicator. That's true for most communicators because trust is relational. If you can't relate to somebody because they look nervous, or they look like they're trying to remember what somebody has told them, you're going to start to become suspicious." (Key Informant #7)

The most effective communications were simple and clear.

Internationally, the campaign that some say stands out as most memorable for its effectiveness is Japan's three C's (crowded places, close contacts, closed spaces) because of its simplicity and clarity, along with other campaigns in South Korea and Taiwan. [9]

"Early on in Fall 2020 all of Japan's communication was built around this notion of the three C's—crowded places, close contacts, and closed spaces. I remember frustratingly referring to the simplicity of the Japanese messaging. The clarity of that messaging and the consistency in the ways in which it informs so much of Japan's COVID response speaks to an overall level of readiness that we didn't see quite as effectively in Canada." **(Key Informant #7)**

"South Korea and Taiwan did well, in part because they learned from prior mistakes and were willing to change. They recognize that communications is key and that we have got to have institutional capacity for communications and pandemic preparedness systems, so that we build up networks in advance and have those networks at our fingertips. But in the majority of European and North American health communications systems we have not seen a willingness to go to ground and really rethink things. That ability to learn from one's mistakes is shockingly absent, not just in Canada but in many, many other countries. I can only think of one agency that is openly saying that things need to change, and that's the CDC in the US." **(Key Informant # 10)**

Communications led by civil society were some of the most effective.

The best communications did not always come from institutional or government communications departments, but rather from individuals, groups, and networks in civil society.

"I think the best communicators in COVID were not communications departments. They were individuals who somehow had authority, and credibility, and a really good voice. They became the 'go to' people. They were either on television, or they were followed on social media, or they wrote for print media. The reason I think they were successful was that they generally weren't affiliated with an institution that was fraught. They weren't with a government, or a multi-lateral organization, or a big institution. They were themselves, and thus were seen to be a bit more independent, though I don't know how much influence they had. There were a bunch of them at different times. In many ways, these people were

protected from being targeted by political actors or people who had agendas." **(Key Informant #9)**

"In Canada there were some extraordinary non-governmental groups on the ground, like the South Asian COVID-19 Task Force[10], This is our Shot[11], and Vaccine Hunters Canada[12] that did a huge amount of work in creating movements aimed at rallying Canadians and encouraging each other. These were incredible initiatives by civil society." **(Key Informant #10)**

"The first great messaging strategies that come to mind were not government affiliated. Groups of academics and comms people came together, doing this work on the side, maybe with some government funding or not. They were doing open, honest, candid, engaging communications with zero consideration for politics. They were just trying to get the message out to people in an open and honest way. John's Hopkins School of Public Health[13] probably had one of the most consistently phenomenal communications campaigns of the entire pandemic. We looked to them with great jealousy. They were engaging, honest, and just gave people information in an engaging way. They used humour. They weren't trying to sell anything. Their accounts replied to comments. They listened to the feedback. They read the room very well. You could tell that delivering an evidence-based communications strategy was their first priority." **(Key Informant #11)**

"No one communicator can do it all. Sometimes, they have to not be from government. It does not matter what that person looks like, what their background is, what language they speak. But if you are more libertarian and inclined to distrust the state, somebody who represents the state, no matter who they are, will not speak to you." **(Key Informant #10)**

Q2. What communications strategies and tactics have been the least effective during the pandemic?

Q2 Summary of Lessons Learned

- **Lack of transparency—by not communicating the unvarnished truth—undermined public trust.**
- **Command-and-control crisis communications cannot be sustained when a situation becomes chronic.**
- **A word can mean different things to different people; language shapes change.**
- **All science has uncertainty; nearly everyone did a poor job of communicating uncertainty.**
- **Politicization of public health harmed the credibility of official communicators.**
- **Canada's division of powers enabled disunited and conflicting communications that confused and alienated the public.**
- **Poor communication about the regulatory process for vaccine approval eroded public trust.**

Lack of transparency—by not communicating the unvarnished truth—undermined public trust.

Transparency in communications is critical for building trust. "During a pandemic, governments faced incentives to not disclose negative information,"[14] such as about vaccines, so as to not jeopardize public acceptance. Yet, "while disclosing negative information may increase hesitancy, transparency sustains trust in health authorities and hinders the spread of conspiracy beliefs." [14] This is a "clear warning against succumbing to the short-term incentive of withholding information. Sustaining trust during the pandemic is critical for health authorities." [14]

> *"Some public health scientists and clinicians…gave ambiguous binary answers, rather than saying they just didn't know…they followed the old paternalistic model of clinical care,*

> *believing it was too complicated for the public to understand. They were afraid of confusing the public…and freaking people out. Yet, [like with a modern patient-centred model of clinical care] the more transparent you are when you're uncertain, the more people will be able to follow you...and roll with the punches, and the less instinctive resistance you will get. That lack of transparency was a mistake. Instead, they should have worn their uncertainly on their sleeve."* **(Key Informant #1)**

Anticipatory guidance is an important communications technique. Anticipatory guidance is similar to foreshadowing in a novel; it is "the risk communication term-of-art for telling people what to expect. It is the linchpin of crisis communication. Knowing what to expect helps people prepare, emotionally as well as logistically. It inoculates them against false rumors." [15] Paradoxically, "anticipatory guidance about worst case scenarios can often calm people down." [15]

> *"What we needed was transparency from government and those representing government. The more transparent you are, the less resistance you create, and the more trust you build. If you don't have anything new to say at a briefing because you aren't yet sure what more to say, hold the briefing anyway. Jurisdictions built trust when they held the briefing anyway and said what they didn't know."* **(Key Informant #1)**

Yet, those speaking on behalf of government—including political leaders, scientists, and physicians—often struggled to find the communications sweet spot between too little transparency (in presuming the public were not scientifically literate enough to understand, or that too much truth could lead to panic, or that admitting they simply didn't know the answers would undermine their credibility) and too much transparency (in reflecting the state of scientific knowledge by burying their messages in complex assumptions, probabilities, uncertainties, and models that only confused the public[16]). Either way, they often failed to communicate effectively with their audience and its diversity.

Command-and-control crisis communications cannot be sustained when a situation becomes chronic.

The default position around the world was the basic crisis communications model that comes out of CDC (i.e. Crisis and Emergency Risk Communications, CERC[17,18]).

> *"CERC was presented as if it's a standard for all public health situations. But I think CERC is highly limited. It's the public health equivalent of an emergency doc leading a team on an acute intervention in an emergency room. 'This person is having a heart attack. Everyone listen to me. People not involved get out of the room. Family out of the room.' That is CERC. It works in an earthquake or a typhoon or Legionnaires' disease. But it does not work in a chronic situation because people will not listen to crisis authority over a long period of time. It especially does not work in a situation where the public health threat is novel because CERC is premised on the idea that the designated authority knows everything that you need to know. In a novel threat, the public health authority doesn't know anything more than anyone else. It also doesn't work in a world that is increasingly polarized and driven by different sources of identity. It only works well where government authority is seen as legitimate by everyone. In that context, over time, CERC accelerates and intensifies the polarization, because it creates a reaction after a short period of time. That's when people start to question whether you know what you're talking about. They may believe that you know something about viruses, but now they're talking about the economy, child raising, education, and things you don't know about. That is a trap we all walked into. We reached for the tool that we knew worked in a crisis."* **(Key Informant #1)**

When the initial crisis ended, we shifted to campaigns around public health—vaccination, masking, air quality mitigation—but we didn't shift from crisis messaging to campaign/marketing messaging, which is essentially a branding exercise aimed at persuading people to take action.

> *"We did a better job at the beginning because that relied on crisis communications. We have a mechanism for that—CDC has CERC, for example. But we don't have a*

communications playbook for the public health campaigns that followed. We missed the mark on branding these campaigns." **(Key Informant #2)**

"I think we kept the command-and-control tone too long. It was never clear when the crisis was over, so we just stayed in crisis communications mode too long. Elected politicians of all stripes, scientists, and public health physician leaders feel that they have only two channels: outbreak crisis vs. behavioural change. It's in the DNA of those professions to be in command-and-control. They are very hesitant to show uncertainty. It takes guts to show uncertainty, as New Zealand's Prime Minister Jacinda Ardern did. Philosophically they are all about 'we don't know' but temperamentally they were brought up in a context where they were constantly debating and defending. What they didn't give up early enough was the tone of certainty that comes with command-and-control communication." (Key Informant #1)

"You only want to give people certainty if there's certainty. If there isn't certainty, take people on the scientific journey with you." (Key Informant #9)

A word can mean different things to different people; language shapes change.

Language shapes the way we think and behave. Communications experts study how language is interpreted by people, including how words and phrases can influence us. "Communication is a process of making meaning, and persuasion is the strategic art of assigning meaning for the purpose of motivating action." [19] Semiotics is about how meaning is created and communicated. [20] Denotation is the precise, literal definition of a word that might be found in the dictionary. Connotations are the positive and negative associations people make with a word, and it is in these associations that meaning can get muddled.

"Take the word 'vaccine'. A scientist, let's say an immunologist, thinks the word 'vaccine' means something very specific. That's what I would call the 'denotative' meaning to 'vaccine', the literal meaning. The scientist thinks to themself, 'If I can just get the public to understand the denotative meaning of vaccine, everything will be fine.' But words don't work like that. Even scientific words have what we call a 'connotative' meaning—implied meaning—a set of associations and identifications that aren't the exact denotative meaning of words. There's a cluster of other associations that influences how an audience reacts to, understands, perceives, or judges the use of any word. Those connotative associations are sometimes a matter of geography, culture, class, sex, gender, religion. Every once in a while, some set of connotative associations solidifies in the culture at large. I don't think we got all the way there with 'vaccine', but that word makes some people think science is 'great', 'wonderful', 'secure', while others think 'danger'. COVID-19 happened at a time when there were a lot of connotative associations about vaccines." **(Key Informant #2)**

"When Health Canada told us to wear masks because they're effective, they were giving us the denotative science. But a certain portion of the population opposes masks because they signify an infringement on personal freedom. That's the connotative set of associations with masks. Part of the responsibility of government is to control the connotative 'chain of signification' in the words they use when they're trying to persuade us to do something. The government's responsibility was to create a different set of positive connotations about masks. Masks could have been about patriotism, or respect, or caring, or strength, or community-oriented, or virtuous person. Instead, the far right created the connotation that mask wearers are weak, scared, sheep, non-masculine, and non-mask wearers as free, brave, and strong. We needed a public health campaign that wedded mask wearing to a positive set of connotative meanings, so that we could combat the freedom narrative. Instead, governments just said, 'Masks work,' so the debate became about whether masks worked or not. That's not the debate you want to have. The other side was having a debate about masks as an infringement on freedom and there was no positive set of connotations that people could take up. If you're going to intervene you have to know what those associations are and how to navigate them, which we didn't do with mask wearing. That was a real missed opportunity early in the pandemic." **(Key Informant #2)**

"The same thing happened with aerosol science. Emotion biases reasoning and emotion motivates action. Messages have to take that into account. Scientists think that if you just get rid of the biases, get rid of the emotions, and explain in a really neutral way how aerosol science works, everybody will understand the science, and they'll make a good decision. That's not possible. People don't act or behave based on a rationale objective. You're missing out on the opportunity to leverage people's emotions to motivate action. In communications, emotions motivate actions and behaviour. You don't want to miss an opportunity to get people to feel something. They don't have to just feel fear or resentful to the government, but you have to help them feel otherwise by how you choose to communicate about these things. For the most part, governments didn't appear to pay any attention to that." **(Key Informant #2)**

Beyond the connotative and denotative meaning of words, physicians, scientists, and academics sometimes use words in their professional circles that might resonate with their colleagues, but those same words made the lay public distrust them. Paradoxically, when experts use jargon that the lay public doesn't understand, the lay public doesn't think the communicator is smart but rather that the communicator can't be trusted.

"When scientists talk about "uncertainty," for example, they understand that word differently from how the public understands it. Communications experts can help the communicator to convey scientific terms and concepts in ways that the lay public understands. Explaining simply makes you more trusted." **(Key Informant #3)**

Framing in communications is about the "choices we make in what we say and how we say it." [21] What we emphasize, how and what we explain, and what we leave unsaid affects how people hear us, what they understand, and how they act. [21]

"The thing about public health messaging is that it's all about marketing. Entirely. You have to realize that people are already compelled to scroll past you, because there's probably something better next. Especially with health messaging, if you say you don't know, people keep scrolling until they find somebody who does know. The messaging needed to be as stupid as possible. People who are really good at messaging talk at a grade 3 level or lower. There's a reason for that. It works really well in social media where you're constantly fighting against the scroll, so the quicker you can get to your message, the better. Honestly, nobody has done that very well." **(Key Informant #6)**

Tying public health messaging to real world experiences and scenarios helps frame communications in a way that makes sense to the public. Key informants reported that it was not effective when messaging focused heavily on numbers without also giving context to help the public understand the significance and meaning of those numbers.

"People are terrible at math. People cannot understand Venn diagrams that [for example] try to explain why there are both vaccinated and unvaccinated people in hospital. Way too hard to understand. That should be available – click here if you want to know that - but it shouldn't be the tip of the spear. People don't need to know so much. They don't need someone telling them how their toaster works. It just works. That's the kind of attitude to have for public health messaging. Just tell me what I need to know to survive and not kill other people." **(Key Informant #6)**

Communications studies make a distinction between 'meaning making' and 'information transmission.' Meaning is always more important than information.

"The political right has just been much, much, much better at understanding public messaging. And the political left, moderates, and progressives have been really, really, bad at it, including those in elected office. Why is that? The left understands communications as just information transmission. They send out information about policies and believe everything will be fine. But the right understands communications as a meaning-making

problem, as in 'What does this [policy, information] mean?". What does a vaccine mandate mean? To some it means an infringement on your rights. The pandemic created a unique scenario where the left got all jazzed that they simply had an information transmission problem they could solve. The left thought that if we just give you the information about masks and vaccines everybody will be fine, and they would be the conquering heroes. The left presumes that people will make logical connections, so always just communicates information. That's a mistake. They didn't even realize that the right was gearing up for a meaning-making fight about those things. The right has always been more ready for that fight than the left." **(Key Informant #1)**

All science has uncertainty; nearly everyone did a poor job of communicating uncertainty.

Much of scientists' own discourse among themselves is about uncertainty. Indeed, "A healthy scientific community rewards members who raise problems before their critics and penalizes those who overstate results." [22] Conveying uncertainty is also essential to science communication, but decision makers and the public often struggled with managing uncertainty because it wasn't communicated effectively.

Instead of helping the public understand that the scientific process is inherently uncertain and iterative, "public health leaders simply stated that they were 'following the science', without acknowledging that the data models they were relying on have varying degrees of accuracy and reliability, that the available science would evolve and require re-evaluation, and that reasonable people could disagree about how to translate data into policy…Once 'follow the science' was exposed as an overly simplistic mantra, various segments of the public chose for themselves what guidance they would follow." [23]

"We didn't figure out how to communicate how science works. This is what Francis Collins [Former NIH director and current White House science advisor] meant when he said, 'The big thing that I know I didn't do, and I don't think a lot of the communicators did, was to say this is an evolving crisis, this is going to change every time we made a recommendation, whether it was about social distancing or mask wearing or vaccines. And we lost their confidence as a result of that.' [24] *"* **(Key Informant #10)**

"The continual two-week promises to do x, y, z at the beginning really did undermine people's trust. By March of 2020 there were many people saying that this was going to be a long-term thing. How you convey that to the public without creating pandemic fatigue before the pandemic has really unfolded is a complicated question but making promises that couldn't be kept was a communications mistake." **(Key Informant #10)**

"The messaging of 'two weeks to flatten the curve' was one of the most horrendous key messaging mistakes. Nobody knew that then. By the tail end of March 2020, health officials had lost the trust of the public. We should have been open and willing about what we didn't know, especially with a novel virus with an unknown future." **(Key Informant #11)**

"We managed change poorly. The shift in masking messaging early in the pandemic left everybody online wondering what the heck they were talking about. We'd been telling people for two and half months that they shouldn't wear masks, and now they were mandating masks. Asymptomatic transmission changed the game, but we didn't explain why we had to wear masks in a way that people understood. It was simple nuance that wasn't explained well. This fueled the whole 'science keeps changing' narrative amongst the misinformation and conspiracy theorists, who grabbed onto that to sow mistrust." **(Key Informant #11)**

Politicization of public health harmed the credibility of official communicators.

Some key informants felt that over time the credibility of public health waned in Canada, in part due to politicization of the Chief Medical Officer's role. This is not unique to Canada. Some say the UK's pandemic response has relied "too heavily on scientists and other government appointees with worrying

competing interests," revealing how the "medical-political complex can be manipulated in an emergency" [25]. Some say the US government "allowed politics to trump public health in pernicious ways". [26]

> "As the pandemic wore on, the credibility of Drs. Henry, Hinshaw, Etches, and de Villa began to wane. Some of what made them effective spokespeople and effective communicators early in the pandemic did not carry as things got more challenging." This had to do, in part, with the politicization of the offices they hold. They all serve at the pleasure of the governments who appoint them, which I think is something the public doesn't understand particularly well. They are all responsible to, and report to, councils, boards of health, and provincial, territorial, or federal governments. **(Key Informant #7)**

The key informants consulted in this review perceived that as the pandemic wore on, communications became less effective due to mounting pressures over competing priorities between politics, public health, and the economy.

> "In some respects, counterintuitively, it's really easy to communicate well when the crisis is objectively at its most severe, because the message is simply 'stay home. There's something scary outside and we don't yet know what it is. We know it's dangerous and everyone needs to stay home.' Everybody was united in that message. But as time wears on and people become more used to it, and they know how to protect themselves better, they become more comfortable. Other pressures start, like business voices become frustrated at the loss of revenue and they want things to open up. As those pressures mount, the cacophony of voices gets louder because people aren't singing from the same song sheet anymore. That's when it becomes very difficult for leaders to read the landscape and know exactly at which point to shift. When we heard public health officials say that public health is about a balancing of risks, and a recognition that it's not just the risk of exposure to the virus but also all the other risks that are almost as consequential as the virus, they started sounding more like elected officials and less like doctors. Doctors don't like when other doctors do that, so we saw a lot of pushbacks from the medical and scientific communities, for whom the only decisions that must be made are in response to the health threat posed by the virus." **(Key Informant #7)**

> "Politics has been the one big overarching barrier to effective communications the entire pandemic. If messaging paints the province or the Minister of Health in a bad light, they just get rid of it. The removal of most protections in schools coincided with the end of reporting cases and outbreaks in schools. That was not a coincidental decision. That's politics playing into it because if we were regularly reporting all cases and outbreaks in schools, people would then ask the province what they are doing about the outbreaks. This fuels misinformation and conspiracy theorists because people then believe decisions are not following the science but rather the will of politics." **(Key Informant #11)**

Canada's division of powers enabled disunited and conflicting communications that confused and alienated the public.

Some key informants—not all—felt that Health Canada's and Dr. Tam's initial framing of the pandemic at the federal level was impressive, but that other departments within government could have helped clarify jurisdictional issues that were confusing to Canadians. Greater public awareness about how the constitutional division of powers works in Canada would been helpful; it's as if we all needed a refresher to remind us of the levels of government (federal vs. provincial/territorial) and their respective responsibilities and powers.

> "The nature of our federation always frustrates Canada's response to national emergencies. Federal and provincial/territorial governments both have responsibilities for public health. They each have different responsibilities, so they have to collaborate, but they don't do a particularly good job of talking to each other. Even within the bureaucracies of both the federal and provincial/territorial governments, units that have to contribute toward a crisis that cuts across agencies, and demands a whole of government response,

don't talk to each other particularly well either. Almost every review I've read of a crisis situation says this is a problem, and it's particularly so in Canada. This was a key barrier in our response. This is unlike New Zealand, which has the benefit of a political system in which the Prime Minister can decree what a national response will entail." **(Key Informant #7)**

"Dr. Tam's framing of what needed to happen was helpful. But there was confusion [among Canadians] about which jurisdiction is responsible for what—federal vs. provincial/territorial—and that could have been better represented in the media because it's not always clear to Canadians, for example, who controls the borders. Collaborative messaging from other departments within government would have helped support Health Canada's messaging, so that people could have understood procedurally what was happening." **(Key Informant #5)**

Beyond Canada, the pandemic has revealed an important weakness of other decentralized health care systems. For example, in the Netherlands, public health agencies under the jurisdiction of local government play a crucial role in testing and tracking. Given the central government's limited authority, "At each stage, policy-making required a lot of consultation, sometimes at the expense of decisiveness in the implementation of government measures to resolve the pandemic." [27] This challenge with the decentralized structure resulted in a plea for less competition and more central coordination in times of pandemic.

Poor communication about the regulatory process for vaccine approval eroded public trust.

Canada struggled with regulatory communications, especially around the approval of vaccines. This undermined government's credibility about vaccine safety, which affected vaccine uptake.

"Canada has a far more conservative approach [meaning slower review process] to drug and vaccine approvals than does the US FDA. Vaccines in the US were approved under emergency authorization that lacked human trial data. Canada's approach is to wait and see how it rolls out in the US, and once there are clear signals of safety, then we wait for the vaccine manufacturer to file a request for approval before we approve. It's always going to be based on safety first, but the public doesn't really know that. I think that eroded trust in government [because some perceived it] as being incapable of moving quickly, or that we didn't have capacity. Health Canada needed a vaccine communication plan, well in advance, so that people understood that approval process. We should have been building public trust by pulling back the curtain and showing how drugs and vaccines are regulated and why they take longer here than somewhere else. Otherwise, we look sluggish and not serious." **(Key Informant #7)**

Q3. What communications strategies enabled the COVID-19 infodemic through the spread of, dis-information, mal-information, and mis-information?

Q3: Summary of Lessons Learned
• **"Just trust us" is not an effective communication strategy.** • **Polarization in science communications calcifies everyone.** • **Uncertainty breeds misinformation; failure to effectively communicate about uncertainty helped fuel conspiratorial thinking and the infodemic.** • **Lack of timely official communications created a void that enabled conspiracy communicators.**

Infodemic management—especially to address public health disinformation on social media[28]—is critical to systematically reduce the impact on health behaviours, especially during public health emergencies.

'Infodemic' refers to "too much information including false or misleading information in digital and physical environments during a disease outbreak".[29] An infodemic "can intensify or lengthen outbreaks" especially when social media can rapidly spread information and amplify harmful messages. [29]

WHO organized the first global infodemiology conference in summer of 2020 to "review current multidisciplinary evidence, interventions, and practices." [30] This resulted in the imperative that public health authorities need to "develop, validate, implement, and adapt tools and interventions for managing infodemics in acute public health events in ways that are appropriate for their countries and contexts." [30]

"Just trust us" is not an effective communication strategy during a pandemic.

Failure to effectively communicate to your audience—across all segments of the population—leads to "mistrust in health authorities" and "causes confusion and risk-taking behaviours that can harm health." [29] This undermines the public health response.

> *"The worst communication strategy is the kind of fact-based, objective, scientifically accurate account, directed at an audience that already believes them. There was no messaging directed at the other audience that was predisposed to contradict that. Most campaigns said something like, 'You should get vaccinated. Here's the location. You need two doses. Trust us.' But that catered to a population that was already committed to getting vaccinated and already literate in terms of the dangers and benefits of vaccination. It was preaching to an already existing church that believed in the Word of God to begin with, and that leaves out a huge portion of the population who are skeptical. It was that portion of the population that is and continues to drive the pandemic. Those campaigns didn't target the people who would have most benefited from them. They were just helping out people who were already persuaded."* **(Key Informant #2)**

> *"Public health folks, particularly around infectious disease in the global North, lulled themselves into feeling like this stuff speaks for itself. Infectious disease was in denial of the fact that infectious disease is still a problem in wealthy countries. We marched into this thing thinking that there was nothing polarizing about public health interventions, including pharmaceutical interventions like vaccines. That was a mistake."* **(Key Informant #1)**

Polarization in science communications calcifies everyone.

The one consistent thing around the world is that the preventative and precautionary doctrines of public health have been far more polarizing than people expected. We are in a more politically polarized environment and "misinformation is a defining issue of our time." [31] Experts often have "misguided intuitions about non-experts' beliefs and behaviors. As a result, when their messages fail, it is easy and convenient for them to blame their audience as irrational." [32]

> *"Polarization became a real problem in part because we thought of it as, 'Those right-wing people just won't listen to the science.' That's not the problem with polarization. Polarization becomes a problem in a chronic or novel disease because it calcifies everyone – every actor. When a political leader says, 'I'm following the science. I'm nailing myself to the mast of science. I will go down with the ship if science tells me to do that,' that's not really following the science. If you instead ask a scientist what it means to follow the science, it just means following the science to the next question, peeling it back layer by layer; it's not a prescription. But if the scientist then comes back and says that the science has changed, the politician says that they have staked their political life on what they originally said and they can't change their narrative, or at least not quickly. Polarization means it's difficult to follow the pace of science on something novel."* **(Key Informant #2)**

To help counter the polarization that feeds misinformation, there is growing recognition that it's really important to engage with the public in a constructive and respectful manner.

"You've got to communicate with your entire population, in different languages, different tones, with different tailored messages. Too much communication was to the median type of Canadian, and many Canadians are not that person, so the communication wasn't right for them. Confusion, not malice, was the source of much non-compliance. In many cases, when people contravened guidelines, it wasn't out of deliberate malice, it was because people were confused. That was a very important point and not just in Canada." **(Key Informant #10)**

"The least effective communications are interventions that threaten a person's identity or ideology. Communication that subscribes to the information deficit model—as in 'I'm just explaining the facts" —is the least effective for those who have a certain ideology. Just giving information doesn't work for a certain segment of the population, though for large chunks of the population, information does work, so we ought not throw the information deficit model under the bus entirely." **(Key Informant #3)**

Uncertainty breeds misinformation; failure to effectively communicate about uncertainty helped fuel conspiratorial thinking and the infodemic.

Conspiracy theorists pre-existed the pandemic, but failures at communicating about uncertainty have enabled the spread of misinformation throughout the pandemic.

Uncertainty management[33] is one of the biggest challenges that health communicators need to address in a crisis situation." **(Key Informant #7)**

Key informants highlighted the repercussions of the public having not understood that the whole endeavor of science is fundamentally uncertain, because that truth was not communicated effectively. Science only knows what it knows today, and tomorrow that could change. There are few unequivocal truths in science. Yet most people prefer certainty and uncertainty makes some uncomfortable and anxious. Conspiratorial thinking offers (false) certainty and makes believers feel safer. Conspiracy theories "satisfy the need for 'big' events to have a big cause." [34]

"Psychologically, conspiratorial thinking can come from different places. It can come from anxiety, or social exclusion, or feelings of powerlessness. It seems almost paradoxical. You'd think that coming up with a theory that secret shadowy figures are controlling the world would not be a comforting thought. But it's actually psychologically more comforting than the alternative, which is that random stuff happens. A random bat infects a random pangolin which leads to a random person in a random market in Wuhan getting COVID. It's more comforting to think that Bill Gates was in a lab engineering this intentionally, because there's an order to that." **(Key Informant #3)**

Key informants agreed that conspiracy theories have definitely gained traction during the pandemic. They say it's partly unavoidable because when there is uncertainty and society feels threatened or anxious, it's fertile ground and we are more susceptible to conspiracy theories.

"One of the defining features of a crisis is the intensity and persuasiveness of uncertainty. The anti-vax activists and others trading in misinformation are some of the most certain people you'll ever speak to. They know exactly what they believe, and they tell the story consistently and repetitively. **(Key Informant #7)**

"Science denial and conspiracy theories go hand in hand. If you disagree with the global community of scientists, you will inevitably believe that those scientists are in a conspiracy to deceive you. The anti-vaxxers already had a psychology of distrust of official sources, whether it's government, or scientists, or scientific institutions. With COVID requiring strong intervention, that activated them to a whole new level." **(Key Informant #3)**

"Fractured messaging between provinces and the federal government didn't help quell uncertainty because we live in a global world. That muddled communications. Everyone was saying something different and that was super confusing. On the national news you'd

hear a different story from Dr. Henry, and Dr. Hinshaw, and Dr. Moore. They were kind of saying the same thing, but not really. As a country, that was unfortunate. We needed one person at the top saying here's the message, so let's do this." **(Key Informant #6)**

Lack of timely official communications created a void that enabled conspiratorial communications.

A lack of timely information enabled conspiracy communications by undermining trust in official sources. Health officials' typical need for certainty in their communications got in the way of the publics' need to manage their fear of uncertainty. WHO's Dr. Mike Ryan warned the world of this very early in the pandemic, "Be fast. Have no regrets. You must be the first mover. If you need to be right before you move, you will never win. Perfection is the enemy of the good when it comes to emergency management. Speed trumps perfection. Everyone is afraid of the consequence of error, but the greatest error is not to move. The greatest error is to be paralyzed by the fear of failure." [35]

> *"People have just gotten used to the fact that health officials are going to take way too long to do anything, so they look for alternative sources. Airborne transmission! My goodness! That debate [about airborne transmission] has been going on and on and has still not been formally accepted by some health authorities. The same is true of long-covid. This lag has led to a further degradation of trust in official sources."* **(Key Informant #11)**

Q4. What did conspiracy theorists do well in terms of COVID communications that allowed them to gain traction?

Q4: Summary of Lessons Learned
• **Conspiracy communicators used persuasive, simple language; they "get" their audience.**
• **Conspiracy theorists offered certainty where none existed.**

Conspiracy communicators used persuasive, simple language; they 'get' their audience.

Anyone may be susceptible to the lure of conspiratorial thinking, given the right circumstances. If we are trying to understand complex and stressful events, conspiracy theories arguably offer simple solutions, communicated persuasively.

> *"What conspiracy theorists always do well is tell a persuasive story. They had the benefit of trafficking in simple narratives, of not having to ever say 'it's complicated,' or 'it's more nuanced than that.' Legislators, scientists, medical experts ply their trade in complexity. It's always been a challenge to respond effectively to simple stories that pray on people's fears and emotions. It's a lot easier to persuade people by scaring them and playing to their emotional registers."* **(Key Informant #7)**

> *"Conspiracy theorists 'get' their audience. When we track our responses to pandemics right back to the plague, it's been identical every single time. What works for them is tapping into fear. Organizations and governments fail to come out with the same energy, fervor, and just simplicity that the anti-brigade always does. Their anger and energy overtakes anything else that anybody says. They know what they're doing, where they are going, and they are unwavering. They hijacked the narrative. We dillydallied everywhere else. It's that lack of strategy, clarity, cohesion where we failed. What we need to learn is how to counter that by doing the same thing. Governments did not come to the PR people and social media agencies to ask how to turn the tide presumably because they see marketing and communications as a cost instead of innovative and driving change."* **(Key Informant #3)**

"The one thing that a conspiratorial framework is going to do way better in terms of communication than a lot of more science-based frameworks is acknowledged fears, legitimize someone's perspective, and then make them feel heard. Some of the more traditional information deficit models of science communication has been 'these are the facts, be logical, do this thing, don't believe pseudoscience.' That doesn't validate anybody's fears or concerns and doesn't bring them into the conversation in an effective way, when they might very well have legitimate reasons they don't trust institutions, such as some Indigenous communities or others who have lost trust because of past experiences." **(Key Informant #5)**

"One of the defining features of a crisis is the intensity and persuasiveness of uncertainty. The anti-vax activists and others trading in misinformation are some of the most certain people you'll ever speak to. They know exactly what they believe, and they tell the story consistently and repetitively. Uncertainty management[33] is one of the biggest challenges that health communicators need to address in a crisis situation." **(Key Informant #7)**

"What conspiracy theorists have done well is to ally with other existing conspiracy theorists. So, you have anti-vaxxers allying with climate deniers allying with QAnon, and they've found ways to join their conspiracy theories together like Lego bricks. They are cross-pollinating themselves. Once someone believes one conspiracy theory, they are more susceptible to believing other conspiracy theories. It's about embracing a whole mindset about distrusting governments." **(Key Informant #3)**

"Donald Trump perfected gobo[a]-level[36] anti-science propagandistic communications. He was arguably the most effective communicator of all." **(Key Informant #9)**

Conspiracy theorists offered certainty where none existed.

A lack of science literacy and critical thinking skills enabled conspiracy theories and anti-science rhetoric to flourish to the extent it has. People have a sense of science as certain because of the way it is often communicated, but science around the pandemic has been anything but certain. Conspiracy theorists offered certainty where none existed.

"Conspiracy theorists offered concrete answers and solutions and reason. They were certain, and in a time of incredible uncertainty, they came along and explained exactly why this was happening. That's really attractive to people. It's comforting. Real life is chaotic, and messy, and unpredictable, without clear edges. It's not just black and white. That broke a lot of people. It wasn't just 'get your vaccine,' because then all of sudden there were variants. That was a lot for people to take in. We all have decision fatigue and the pandemic overwhelmed us with too many decisions and choices. We just wanted science to tell us what to do. It's like I can't stand going to [restaurant] anymore because there are too many choices." **(Key informant #6)**

Q5. Which communications strategies can help to combat disinformation and the COVID-19 infodemic?

Q5: Summary of Lessons Learned

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[a] Gobo is a "social media aggregator with filters you control. You can use Gobo to control what's edited out of your feed or configure it to include news and points of view from outside your usual orbit. Gobo aims to be completely transparent, showing you why each post was included in your feed and inviting you to explore what was filtered out by your current filter settings." [36]

> - **Providing better information—by explaining the evidence and reasoning that is guiding decisions—can counter misinformation and disinformation.**
> - **Social listening is an effective technique to track, analyze, and expose concerns, sentiments, rumours, and misinformation so that it can be quickly countered.**
> - **Explaining threats and offering hope is more effective than appealing to fear alone.**
> - **Prebunking—pre-emptive refutation—helps to inoculate against conspiratorial thinking better than debunking.**
> - **Radical transparency in communications builds trust and helps prevent conspiratorial thinking.**

Providing better information can counter misinformation and disinformation.

Explaining the evidence and reasoning that is guiding decisions helps counter misinformation and disinformation. "The best way to counter pervasive misinformation is with better information. If officials communicate the evidence guiding their decisions, they demonstrate their respect for the public's right to know and ability to understand the experts' findings. The science of risk communication provides methods to convey facts that can be counterintuitive." [32]

"Misinformation, if unaddressed, can cancel out our attempts to communicate the facts. If we ignore the role of misinformation efforts, we risk all of our efforts being cancelled out. Addressing misinformation does need to be part of the strategy, drawing on the body of research about how to address misinformation." [37]

> *"It is absolutely the case that before COVID-19, a significant portion of the population, had a positive set of associations with the idea of vaccination. And another portion had a negative set of associations with the idea of vaccination. That predated COVID. And any communication strategy, needed to, and still needs to, take into account that historical set of associations."* **(Key Informant #2)**

> *"Defensiveness and patriarchal defensive command-and control-language in public health communications will create reactions. I think conspiracy theories come from alienation. The best way to mitigate this kind of alienation is to show that you are listening, and not just pro forma."* **(Key Informant #1)**

> *"Leaders need to explain in honest, transparent, terms how science works by being truthful about uncertainty to counter efforts to erode trust in science, without betraying the impression that we don't know what's going on."* **(Key Informant #3)**

> *"We have to work with tech and social media companies to try to push them to filter out the misinformation and disinformation. We've had some success at that with Facebook and Twitter, although companies didn't do as much as they should have."* **(Key Informant #9)**

Social listening exposes misinformation so that it can be quickly countered.

The best way to mitigate alienation is to show that you're actually listening. Social listening is an effective technique to track, analyze, and expose concerns, sentiments, rumours, and misinformation so that it can be quickly countered. Social Listening Reports[38] from South Africa are weekly reports of COVID-19 and vaccine concerns, sentiment, rumours, and misinformation. They are short reports that answer standard questions and bring together anecdotal information about rumours and concerns. They are all made public online, by week, by jurisdiction. These reports then give government tools to reflect, in policy and in communications, what's being heard on the ground in near real time.

> *"To show you are listening, you have to generate listening data. South Africa produces Social Listening Reports. This is really smart. These reports are all made public and they give government tools to reflect in policy- and decision-making."* **(Key Informant #1)**

"What communications experts tend to have is common sense. Our job is rooted in reality, in understanding what people are talking about out there, and how they are responding to things. We're doing social listening. We work a lot on Google, looking at search terms about what's being searched. If the experts are doing and proposing things that are at odds with how we in communications perceive ordinary people are behaving and absorbing information, then we know that either the experts' information won't land with people, or it could even be misconstrued or resented." **(Key Informant #9)**

Explaining threats and offering hope is more effective than appealing to fear alone.

A dual communication strategy that emphasizes both threat and hope is more effective for motivating behavioural change than appealing to fear alone. "During the COVID-19 pandemic appeals to threat and fear have frequently been used by media, politicians, and health authorities in order to motivate the public to engage in protective behavior. Yet, both the literature on crisis communication and psychological studies during the pandemic show that a sense of threat is mainly effective for motivating adequate behavior change if this sense is coupled with a sense of coping ability or efficacy, resulting in feelings of hope. Providing hope through actionable advice and long-term-oriented communication may be especially important during a prolonged crisis, such as a pandemic, where fatigue may otherwise demotivate publics." [39]

*"Communication is about human understanding. If we treat communication as a contest over who can get the most retweets, and the most likes on Facebook, and the biggest audience share, that doesn't tell us anything about how well we have done and how effectively we have shaped public understanding and allowed people to take measures that protect themselves." **(Key Informant #7)***

Prebunking—pre-emptive refutation—helps to inoculate against conspiratorial thinking better than debunking.

However, "among those who have already lost trust, health communication has little persuasive effect." [14] Trying to reach those already in the rabbit hole is difficult and requires resources and skill, such as engaging with someone who has left the fold. Thus, if resources are limited, we should focus on inoculating the (much larger) group of people who are susceptible and at-risk by educating them on the traits of conspiratorial thinking through prebunking. [34,37] "If people are pre-emptively made aware that they might be misled, they can develop resilience to conspiratorial messages." [34]

"From a communications perspective, addressing conspiracy theories comes back to the audience. The two main audiences are either conspiracy theorists or those who don't yet believe conspiracy theories but who are vulnerable. With conspiracy theorists, we try to change their minds but because they are so distrustful that is very difficult to do because any information is seen with suspicion. If you have limited resources, we recommend instead focusing efforts on inoculating the much larger group of vulnerable, undecided, and disengaged people. You do that by explaining the red flags of conspiratorial thinking." **(Key Informant #3)**

Radical transparency in communications builds trust and helps prevent conspiratorial thinking.

The seven traits of conspiratorial thinking[34] are the belief in contradictory ideas (conspiracy theorists can simultaneously believe in ideas that are mutually contradictory); overriding extreme suspicion; nefarious intent; the belief that 'something must be wrong' and that we are being deceived; the perception of being victims of organized persecution; immunity to evidence; and re-interpretation of randomness rooted in the belief that nothing occurs by accident so small random events are woven into a broader, interconnected pattern. Radical transparency[14] in communications—wherein information is transparently disclosed to the public, even if negative information—builds trust and helps prevent conspiratorial thinking.

"Leadership communication has to be transparent. Transparency builds trust. That lends itself to conspiracy theorists and to the right-wing message that governments can't be trusted. When there's a void in communication, the conspiracy steps in and attaches whatever meaning they want. When a leader is transparent, even when it's scary or troubling, the information itself can limit the contest over meaning and it's harder for other voices to step in and fill the void with misinformation. It was better in the beginning; now it's a train wreck, a straight downward slope in terms of transparency. Transparency equals trust in a leadership situation. It doesn't mean behavioural responses will follow, but you can maintain trust and build up a quotient of trust to motivate action later on at a different point in time than you might anticipate. You never know exactly what piece of information will flip a switch for someone. Persuasion is one of the hardest things we do as humans. Most behavioural change happens in the presence of a trusting relationship. It's more important to build trust and assume that trust will do its work at some point." **(Key Informant #2)**

"The prime recipe for misinformation is when there's a gap between the demand for information and the supply of information. The organizations that did well were quick with their communications. For example, something would happen, like a concern about vaccines and myocarditis, and then it took some health officials the better part of a week to put together project teams and people to draft and review key messages. In that time, before they finally put out the comms, the only thing online was the misinformation blowing up like crazy. The organizations that would just get out and react to say, 'We're reviewing this, we don't know, we'll keep you posted' did much better." **(Key Informant #11)**

Q6. To what extent did governments and government-affiliated public health teams work with communications experts to hone messaging?

Q6: Summary of Lesson Learned

- **Effective public science communications is a team sport requiring diverse expertise.**
- **Communications scholars and experts outside government were rarely consulted or embedded.**
- **The creative advertising industry as a whole could have helped with campaign messaging but was not at the table in Canada; elsewhere the industry was more engaged.**
- **Tension between medical ethics and public health ethics complicated communications, raising questions about who is best suited to be a trusted public messenger.**

Communications scholars and experts outside government were rarely consulted.

The fact that the field of communications is an evidence-based discipline rooted in a body of scholarly research seems to have been largely overlooked by governments.

"…there is an actual science to 'science communications'. Ironically, communications researchers often don't communicate about themselves well enough. A scientist would never tolerate anecdotal thinking informing how they do their science, yet anecdote does inform how they do their communications. The fact that you can speak does not make you a communicator." **(Key Informant #3)**

Key informants reported that communications scholars and experts were rarely consulted about how best to communicate with the public. Most reported that they made themselves available to government, repeatedly offering to help inform communications. Some were invited once or twice to a conversation with either the PT or federal government, but were not, frustratingly, invited to remain at table. They did not understand why and despaired at the lost opportunity.

"I don't know a single person in my field [art and science of persuasion] who has worked with governments, or governments' messaging departments, in the US or in Canada, on

persuasive messaging during the pandemic. You are the first person to ask me anything about what I think. It feels about two years too late." **(Key Informant #2)**

Some key informants expressed concern about the lack of expertise within government communications departments.

"My sense is that people working in government public relations are often in media positions perhaps because they can write, and they have [various graduate] degrees. But what I see is a bunch who are way, way, in over their head. Like they would be in over their head if it wasn't a pandemic." **(Key Informant #2)**

"It doesn't make sense to epidemiologists and public health doctors that people wouldn't listen to them. It doesn't matter how good your message is if nobody's paying attention. You have to get their attention first, and make them care, before you deliver your message. Yet within government you often have career public servants who have been with the organization for 15 or 20 years and have just moved from role to role. They have no education in communications, no training. Prior to the pandemic, the public health bureaucracy had never put much emphasis on communications and never saw the value in hiring good comms people." **(Key Informant #11)**

Other key informants reported that there were experts in communications inside government, but their influence was sometimes quite limited.

"They would all have internal experts inside closely monitoring their messaging… putting their stamp on everything, and they may have their trusted advisors outside who they may turn to for advice. The initial crisis would have been very directed politically, and then the ongoing campaign work would have been very much handled at the bureaucratic level with direction from the political staff on content and tone." **(Key Informant #8)**

"Very often comms people are not really involved in a lot of the discussions. I've been able to peek behind the curtain over the last couple of years with some of the health communications and realized that they've got really talented people on their teams, but they just really didn't have much say in anything." **(Key Informant #11)**

The creative advertising industry as a whole could have helped with campaign messaging but was not at the table in Canada; elsewhere the industry was more engaged.

Some key informants reflected on a missed opportunity—that the creative advertising industry and brands could have brought their skills to support the whole of Canada with campaigns aimed at testing, isolating, masking, vaxxing, and air quality, had only the federal or provincial/territorial ministries invited them to the table. Why didn't that happen?

"How did we fail to recognize this as essentially a public messaging campaign? Where's the jingle that we'll all remember? Where were the big advertising companies that do really good work that could have been hired by government? It's not like we didn't have the money. But I saw no evidence of their involvement." **(Key Informant #2)**

"At the beginning of the pandemic the Government of Canada reached out to some of the most award-winning creatives and strategists to deliver a pandemic communications strategy. Unfortunately, government procurement got in the way and all but shut it down because we hadn't been through a due diligent process to select these people and businesses as providers to government. It wasn't a single company that was coming forward to offer support; it was a whole industry. We would have been able to put pressure on our partners—the media owners—to help amplify that communications strategy. It would have involved creative people from all forms of advertising, including from the multi-cultural sector which was a struggle for many countries. One agency, [name], is Health Canada's

official marketing agency.[40] *I do not have any purview of the brief—meaning the expectations or ask—that was created for [name] or what their budget was, so I cannot comment on effectiveness from a professional point of view. But certainly, as a consumer and somebody constantly digesting media, I'm not personally aware of anything they produced online, billboards, magazines, television, or radio."* **(Key Informant #4)**

"The ad industry did step up globally in 2020 with pro bono support from some advertising, marketing, creative, and communications firms. This required a fast-tracked procurement process to allow rapid engagement with non-State actors." **(Key Informant #9)**

Tension between medical ethics and public health ethics complicated communications.

Tension between the ethics of medicine and the ethics of public health raised questions about who is best suited to be a trusted messenger. In Canada, physicians (trained in various disciplines) and politicians were the main messengers, supported to varying degrees by communications experts. Some key informants asked whether physicians are best positioned to communicate with the public during a pandemic. If they are best positioned, some key informants wondered whether some medical specialities are more skilled at communicating with the masses than others. There is a "difference between clinical ethics, driven by a deontological principle of duty of care to one's patient, and public health ethics, driven by a more utilitarian ethics of achieving the greatest good for the whole population." [41] Physicians, even if they are public health physicians, are driven *a priori* by clinical ethics, not public health ethics, even if they are trained in public health too. Are some more able to bridge the gap between clinical and public health ethics?

"Physicians are trained to look at 'the patient before me.' Their unit of analysis is the individual, even if you are an infectious disease doctor. They are not necessarily trained to look at population dynamics or even social determinants of health. It's just not what they do. It's a mistake to equate clinical medicine with clinical public health." **(Key Informant #1)**

"It's possible that who was doing the communications—scientists, infectious disease doctors, physicians who were Chief Medical Health Officers—are not trained in communications or persuasion. They're trained in science and medicine. Doctors tended to talk about symptoms, and if you experience x then do y. It was a very individual agent-centred approach. To me that missed the mark. This was, and is, a public health issue and we didn't learn about the public health ramifications or how to mitigate them. It was treated like an individual medical problem rather than a public health problem. It framed the whole problem as one of individual agency, because physicians focus mostly on individual patients. That made getting vaccinated an individual choice rather than an intervention to protect the whole public's health." **(Key Informant #2)**

"Within medicine we went right to the tertiary specialist – the infectious disease doctor. We missed a ton of stuff along the way when we made that leap. The disease is different than the virus. The infectious disease doctors know about the virus but the whole pathology of the disease is that it infects multiple systems, and that's the domain of internal medicine. But more importantly, and what we really missed is primary care. We had few practicing family docs on the Science Table. In the culture of medicine there are deep, historic, tribal differences between hospital-based hyper-specialists and community-based family docs. Primary care docs would have been really helpful in public communications, in figuring out vaccine distribution, and in knowledge translation. I do not understand why primary care wasn't at the table, other than that family docs don't have a well-organized tribe. Yet, the real point of public health is that it's holistic, not tribal." **(Key Informant #1)**

Other key informants felt that physicians, scientists, and public health experts were best suited to be the face of communications in a public health emergency, and certainly more so than elected officials. Others felt that we needed both elected leaders and health experts, but that elected leaders should be the main messengers.

"The more we saw elected officials try to direct the response, the more confused the public became, and the more politicized the public conversation about COVID-19 became. Premier Ford had an exceedingly high measure of public trust and confidence early in the pandemic in part because he never said anything. He stood there beside his medical officers of health and health minister and let them run the show. Premier Horgan wisely stepped aside in BC and let Dr. Henry and Minister Dix run the show." **(Key Informant #7)**

"In an ideal world, scientists, physicians, public health—I lump PhDs, MDs, and MPHs in the group—are best positioned to communicate because they have deep knowledge, experience, credibility, authority, credentials, but what they need to do is twofold: they need to practice and anticipate pitfalls so they understand that what say can be weaponized; but most importantly they need to infuse their brains with intellectual diversity. They need to be open-minded and not cling to known knowns and orthodoxies and habits. They need to say what they don't know and have some humility. Experts would often say things like, 'there's no evidence' or 'this is very rare' rather than 'as of this moment, this is what we see.' Experts tend to want to be definitive, to be the saviors. If you communicate with humility and open-mindedness, you will make fewer mistakes because you're bringing people on a journey with you, rather than talking down to them and then having to either dig in when you're wrong or apologize." **(Key Informant #9)**

"I think it has to be both. Having health experts available gave the public a sense of confidence in what was being shared, but they are not accountable to the public in the same way that elected political leaders are accountable so I don't believe they should be leading the main message." **(Key Informant #8)**

Effective public science communications is a team sport requiring diverse expertise.

Some key informants asked whether the right people were at the comms tables. One communications model says that four kinds of expertise are required to achieve effective science communications[42,43]: (1) subject matter experts are needed to produce authoritative summaries of evidence relevant to decision makers' needs. However, "eager to share their knowledge, subject matter experts may drown decision makers in facts." Thus, (2) decision scientists can identify the facts that decision makers need to know. But "knowing what to say does not guarantee knowing how to say it and scientists' intuitions can be a poor guide to effective communication," so (3) social, behavioural, and communication scientists also need to be at the table. Finally, good science communications needs (4) practitioners "to create channels, recruit stakeholders, disseminate messages, mind legal constraints, anticipate cultural sensitivities, and collect feedback." The whole communications process needs to be carefully managed to keep "social scientists from garbling the facts when trying to clarify them, and practitioners from spinning messages when the facts are needed."

"One model[42] says that public science communication is a team sport, and you need at least three key players on your team: (1) content experts (like medical researchers and physicians), (2) social scientists (those who do communications research), and (3) communications practitioner (people who are experienced with public communications and who are trusted messengers who share the identity or values of the specific audience). That triad is a good formula. We've had medical experts and government trying to serve as communications practitioners, with only marginal success." **(Key Informant #3)**

"Just as comms people are often seen as serving the technical experts, behavioural scientists in a health institution are sometimes rare and they're often seen as softer and less legitimate. They're seen as an afterthought, depending on where you are. That's not good. Communications departments need to be diverse, with the capacity to do advocacy, policy change, and behaviour change too. You need the continuum of communications in one place." **(Key Informant #9)**

Q7. What could governments do now in terms of communications to help prevent and control infection and enable our collective recovery?

Q7: Summary of Lessons Learned

- **Canada would benefit from a national communications strategy for public health.**
- **Communications needs to be radically transparent to rebuild trust in government.**
- **Misinformation and disinformation must be swiftly countered.**
- **Governments need to recognize that one size does not fit all when it comes to communications and must account for audience diversity.**
- **Public communicators need to anticipate and prepare for the emergence of our collective grief and be mindful of that in messaging.**
- **Establishing a truly independent public health agency at the federal/national level would enable better public health communications.**
- **Communications, alone, cannot effect change going forward; governments need strong policy, regulations, and operational solutions to help normalize protective public health measures.**

Canada would benefit from a national communications strategy for public health.

Canada needs an comprehensive, expert-designed, well-funded, coordinated, national communication strategy[44] that takes the "project of persuasion seriously, or at least understands that transmitting information is not all we need to do to motivate action". [19]

> *"I would fight like hell for more resources for public health communications and I would prepare for whatever the next pandemic is going to be. That starts with making a case that communications is an urgent and ongoing problem, not something to shore up again when the next emergency hits."* **(Key Informant #7)**

> *"I don't see how you achieve a lot of the communications goals without investing in communications. I've seen a reluctance to do so on from most governments even though, ironically, it's one of the cheapest things you could possibly do. How much does a stay in hospital cost? Let's imagine that with better communications we could prevent more infections and significantly reduce hospital admissions. That's way more than the cost of the annual salary of one skilled communications expert. It's cheap, cheap, cheap to do well, yet I haven't seen governments recognize the importance of building out institutional capacity for communications or they are admitting it after the fact. I hammer that home because it's the foundation upon which everything else resides."* **(Key Informant #10)**

> *Governments have to recognize that communication is an interdisciplinary art and science. A lot of people who do public health communication don't have backgrounds in communication. They come into communication out of epidemiology or another biomedical area of expertise. Some may approach it from a marketing perspective, but marketing communications is very different from public affairs communications, which is different from risk and crisis communications. The approach of behavioural science is very different from anthropologically-informed or ethnographically-informed approaches to communication which think about communication as a problem of intercultural understanding. After every emergency, WHO and governments invests in more epidemiology, but they need to hire more anthropologists, social scientists, geographers, psychologists, and sociologists."* **(Key Informant #7)**

Communications needs to be 'radically transparent' to rebuild trust in government.

Communications need to become 'radically transparent.' This would help to rebuild trust in governments, including in Health Canada.

"I would like to see a commitment to a form of radical transparency about any public health issue and a campaign to rebuild trust in Health Canada around science and medicine. I think that trust is in jeopardy. We need a well-thought out, professionally designed, campaign to rebuild it." **(Key Informant #2)**

"I think the first thing governments have to do, in a public health sense, is rebuild trust. Some people I know fairly well believe that COVID is a hoax, or that our natural immunity is enough and we don't need anything else. These are people who I thought were fairly sentient beforehand, and I wonder how they got to that point. If another COVID-like crisis hit right now, it would be really hard to just jump into frank communications that people would listen to. I think we need to rebuild trust. How do we do that? It's hard. One way to start is simply by government incidentally modelling good Canadian public health behaviour, like when the PM ran back inside during a live press conference to grab his coat[45]." **(Key Informant #6)**

Misinformation and disinformation must be swiftly countered.

Public health needs to swiftly counter misinformation because it erodes public trust. Engaging the expertise of a good PR firm, or the whole of the communications industry, would be a smart investment to deal with misinformation, which is now doing damage about core public health interventions, such as routine vaccines. Misinformation is sticky and it is best pre-empted through inoculation to explain misleading or manipulative argumentation strategies to people. If we cannot pre-empt, then we must debunk misinformation through detailed refutations so the misinformation can be "unstuck". [37] "Misinformation, if unaddressed, can cancel out our attempts to communicate the facts. If we ignore the role of misinformation efforts, we risk all of our efforts being cancelled out. Addressing misinformation does need to be part of the strategy, drawing on the body of research about how to address misinformation." [37]

"One thing government needs to do urgently is develop a clear, national vaccination strategy, run by a good PR firm, to counter the lack of trust that has come from misinformation, disinformation, poor communications about vaccines. An emerging problem is that vaccinations are down for other things too, so government needs a good campaign to reverse that trend." **(Key Informant #2)**

Health Canada has got to do something about the misinformation angle. They can keep doing comms that might not be excellence in communications and it would probably to alright if it wasn't for all the mistrust being sown by misinformation and conspiracy. I'm part of a small working group that is hoping to have misinformation formally declared a public health issue. It's that serious. You see Tim Caulfield [46] [professor of law, University of Alberta] sounding alarms as loud as he can and Ben Collins [covers disinformation, extremism, and the internet for NBC News] waving red flags. Even when the pandemic is over, the misinformation and mistrust in government is still going to be there. If we don't tackle that now, then when the eventual next big thing happens, we're never going to get people to listen to us again." **(Key Informant #11)**

"Health Canada should… dedicate an entire team to do nothing but keep an eye on what's trending, to actively seek out and debunk misinformation. The moment they see a new thing trending online, get comms out as fast as you can to debunk it before it takes off." **(Key Informant #11)**

"Ask the communications industry to step up, because we will." **(Key Informant #4)**

"It would be strategic for governments to bring rhetoricians, communications scientists, and scholars in media studies, social science, and humanities onboard to help map and track what's coming in terms of misinformation. Communications practitioners, such as public relations experts, journalists, or others who understand how the media business works, are

especially effective and urgent because they know how media works across various platforms and across different generations." **(Key Informant #5)**

Governments need to recognize that one size does not fit all when it comes to communications and must account for audience diversity.

"Perhaps the most crucial principle for Canadian officials to keep in mind is that the public is not monolithic: populations are diverse and their needs change over time. It's therefore crucial for health messaging to meet people where they're at." [47]

> *"Monolithic campaigns don't work. You can't just do TV commercials. There's only a certain demographic that regularly watches TV anymore. That's a big problem. The government has to get rid of that mentality and know that all messaging campaigns have to be multi-modal, through several different media channels."* **(Key Informant #2)**

> *"We need more research into how to deal with misinformation in different media platforms and audiences, such as TikTok, Twitter, Facebook, Instagram, TV, and radio. There are a potentially infinite number of platforms and audiences, so you have to make decisions based on your resources."* **(Key Informant #3)**

> *"You need a diversity of platforms and channels to reach people where they are. You need to have a feedback loop because you're going to learn as much from them as they're going to learn from you. You also need intellectual diversity; our scientists need to listen to a diversity of people, not just ordinary people, but even diverse expert views. Don't fall back on the usual suspects in your scientific networks, the ones you're comfortable with. Don't self-censor. Make yourself a little uncomfortable. That works well."* **(Key Informant #9)**

> *"In communications you have to disaggregate the population. In public health work we disaggregate the population all the time, into different sub-groups with different risk factors, different environments. In communications we confuse different groups all the time. Yet, some need to hear that a public health protection is an order, and others will resist if it's an order. So how do you suck and blow at the same time? That's a great communications question. You can. But ministries of health are so frustrated by this that they see it with disdain, so they are polarized against their own populations. When it comes to social determinants of health, we know about these differences, but when it comes to comms it's like it's a big surprise. You don't have to communicate with every segment all the time, but you have to communicate with whichever groups are at risk in the moment."* **(Key Informant #1)**

> *"There's a mantra: Simple clear messages repeated often through a variety of trusted messengers. That is key. You must ask who the right person is to reach this particular audience. It can be a trusted messenger who shares the values and identities of that audience, but also trusted in that they are a natural credible person to share that message. But it's not enough to have that messenger if you don't have focused, simple, clear messages that are accessible. Scientists get bored too quickly and they don't like repeating stuff, but from a communications perspective you have to repeat messages over and over and over again."* **(Key Informant #3)**

> *"To build trust for vaccines, I think you have to look at building networks of trusted voices, who are not medical or scientific experts. They are faith-based leaders, science teachers, physical education teachers, coaches, sport organizations. Of course, you need doctors and scientists, but their messages are not going to permeate or have the desired effects if you don't involve community-level leadership. Where the rubber hits the road is in the classroom, in the dressing room, on the soccer field, in the church, synagogue, or mosque. This is especially true for communication on vaccines."* **(Key Informant #7)**

Public communicators need to anticipate and prepare for the emergence of our collective grief and be mindful of that in messaging.

Grief is not linear. It's often messy, unpredictable, and lingering. Though we've acknowledged the toll of the pandemic on mental health, we haven't really begun to process the collective grief that will surely emerge in all of us as we begin to process what the world has been through. The pandemic has eroded factors that might help protect us, like "confidence in authorities, a sense of belonging, and community solidarity." [48] Public health communications needs to keep that front of mind as they consider their messaging. [49–51]

> *"I've said a number of times that we haven't fully come to terms with how dark and horrible the pandemic has been. An entire generation of young people has finished high school in lock down and started university in lock down. They feel like they've lost a whole bunch of their lives. Public health messaging would be really smart to realize that people are treading water in different degrees, whether they're having a hard time paying bills, or dealing with a cheating spouse, or worried about their kids' health. I recently found myself on the treadmill listening to music and suddenly crying. It's all stuck inside all of us, and it's going to come out in unpredictable and unexpected ways."* **(Key Informant #6)**

Establishing a truly independent public health agency at the federal/national level would enable better public health communications.

Some key informants argued that the Public Health Agency of Canada (PHAC) either lacked capacity and/or it does not have the authority that some originally envisioned when it was created in 2004. This is consistent with previous reports and audits. For example, a 2021 audit of PHAC "found that at the onset of the pandemic, PHAC lacked some of the systems and practices it needed to properly manage and operate the country's stockpile of emergency equipment. The Agency had known for over a decade that these issues existed." [52] Another 2021 report found that, "An important position at the Public Health Agency of Canada (PHAC) was vacant and the country's pandemic early warning system was understaffed when the COVID-19 pandemic struck, an independent panel has found." [53] Key informants generally felt that establishing a truly independent public health agency at the federal/national level would enable better public health communications.

This, of course, is not unique to Canada. "Across Europe, public health, as a profession, continues to be under-valued and under-resourced in the context of growing demand." [54] Globally, "if there is one universal lesson that this pandemic teaches us is that a new generation of public health leadership and authority, better trained, respected, and managed, will have to be established in most communities worldwide and under a strong and independent WHO." [55]

> *"The Public Health Agency of Canada, established after SARS, was supposed to be invested with far more authority than it has exercised during this pandemic. This is largely because it was gutted over the last two decades. It is a shell of the self it was supposed to be when it was originally envisioned as the CDC of the north. [It] does not have the independence that the CDC [purportedly] does, nor the budget, nor the authority to respond without political consideration. Beyond that, the problem of coordination is really about establishing a network of public health emergency response leads who are in regular contact with each other, who meet on a regular basis, and who are tasked to lead the integrated pan-Canadian response to national public health emergencies. If you have to build all those relationships once the pandemic has begun, you're already well behind."* **(Key Informant #7)**

Communications, alone, cannot effect change going forward; governments need strong policy, regulations, and operational solutions to help normalize protective public health measures.

Some key informants said that managing COVID now and going forward isn't so much a communications problem but rather a policy problem, requiring regulatory or operational solutions.

> *"I feel very strongly that the problem now is not a communications problem. It's a policy problem. I think governments and their partners across the public and private sectors have reached a point where they have given up. They're exhausted, understandably, they are stretched, they are losing to the far better organized and more vocal forces of misinformation. The political calculus is such that there is more to be lost by swimming against a tide of complacency, exhaustion, and misinformation. That's really hard to do when you want to be re-elected or reappointed. The solution now, from a communications perspective, is how can we persuade people to do the work of government, which is basically where we are now. It is the work of government, of leaders in organizations, to ensure that citizens and members and clients are safe. Absent regulation that says you should do this, or you must do it at this time, no amount of good communication is going to persuade people that they should continue to wear a mask indoors for the benefit of people who are immune suppressed, which includes a growing number of people who have been repeatedly infected with the virus. It makes it very, very hard. The fact that we still talk about masking as a 'restriction' to individual freedom and liberty, rather than a 'protection' is incredible to me. But we use that language. We've talked about them as public health restrictions for so long that it's hard to now say these are not restrictions but rather 'protections.' You can come up with brilliantly composed guidelines and recommendations, you can encourage people, you can have public service announcements, and all those other things, but none of it is going to be effective in prevention of harm to public health quite like strong policy to normalize the presence of protective measures."* **(Key Informant #7)**

> *"If, for example, it's now all about vaccine uptake, it is less about communications and more about operationalizing easier access to vaccines. The onus is now very much on people to continue to vaccinate, but how are we going to make that easier for people? Are there plans to move COVID vaccination into school like we do for other vaccines like HPV? They need a very intentional campaign around vaccination. I don't ever believe anything is fixed solely through communications. Even when there is a crisis, there are strategic operational decisions that need to be made to communicate a winning position. If those are not made, you cannot win."* **(Key Informant #8)**

Discussion

> "We constantly forfeited the chance to do better. But that chance still exists, and we can't afford the luxury of nihilism." [56] (Ed Yong, The Atlantic)

As we complete this report, the pandemic is not yet over despite appearances to the contrary. What lessons have we learned about communications that will help us going forward, and in the future whenever the next public health crisis strikes?

In hindsight, some mistakes are glaringly obvious. Others take careful and honest reflection before we see the light. It appears that in this pandemic the science of communications was mostly ignored in the design and execution of public health messaging. That must change. Canada needs a coordinated, national, evidence-informed communications strategy that is transparent and captures the publics' attention. We need increased institutional capacity for communications at all levels of government so that we aren't starting from scratch the next time. Effective public health communications is more about meaning-making than it is about mere information transmission. Language shapes change.

Understanding and implementing the art and science of persuasion enables behavioural change, quells conspiratorial thinking, and increases adherence to public health protections.

Key informants were unanimous in the need to devote more resources to managing the infodemic, not only for this pandemic, but to buttress us against ongoing and emerging threats to other public health protections, like routine immunizations which have been effective for more than two centuries. Conspiratorial thinking thrived in part because there was no messaging directed at those predisposed to contradict fact-based, objective, scientifically accurate information. We failed to inoculate the unconverted who were vulnerable to conspiratorial thinking. This was a mistake. Radical transparency in communications would have helped to build trust and reduce defensive positions. To effect change, we need more resources for communications, greater capacity, and dedicated teams within government to actively seek out, track, monitor, and debunk misinformation online, and vigilantly monitor for new misinformation circulating. We need more research into how to deal with misinformation in different media platforms and audiences. Teaching critical thinking skills to children[57] would help them learn to recognize the patterns of conspiratorial communications to build resilience against misinformation.

Clinical public health practitioners—including infectious disease specialists, epidemiologists, biostatisticians—have played a leading and essential role in our response to pandemic communications, but their messaging often failed to resonate. Missing from most comms tables were family doctors who routinely communicate with patients and who could have helped the public feel like a 'real doctor' was at their bedside, rather than a technocrat (or politician). Also missing were other kinds of experts, like behavioural economists, sociologists, anthropologists, psychologists, geographers, engineers, and non-physician experts classically trained in traditional public health disciplines, all of whom could have brought insight and perspective. The entire marketing and advertising industry could have helped develop messaging; they are experts at that. Where is the pandemic jingle we will all remember? There isn't one. Beyond experts and evidence, more could have been done to seek out and listen to the wisdom of ordinary people as they tried to navigate life through the pandemic.

Conclusion

We, both in Canada and globally, now have the opportunity for introspection and self-reflection to learn from our mistakes. In this rapid review of the available evidence, coupled with a set of key informant interviews, we have highlighted the observations of communications scholars and practitioners, setting out lessons for decision-makers to consider in advancing more savvy and effective communications approaches when faced with a pandemic, like COVID-19. We can prevent, protect, control, and prepare for public health threats, but to do that effectively, we need to work more closely with communications experts. It's not too late to do a better job of that, both now and in the future.

> 'Ring the bells that still can ring. Forget your perfect offering. There is a crack in everything. That's how the light gets in.' (Leonard Cohen, "Anthem"[58], 1992)

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Appendix 1: Expert Consultations (alphabetically)

John Cook
Assistant Research Professor, Centre for Climate Change Communication
George Mason University
Fairfax, Virginia, USA
Founder, Skeptical Science
Queensland, Australia
jcook20@gmu.edu

Rob Danisch
https://uwaterloo.ca/communication-arts/people-profiles/robert-danisch
Professor, Department of Communication Arts
University of Waterloo, Ontario, Canada
rdanisch@uwaterloo.ca

Patricia Favre
https://navltd.com/team/patricia-favre/
Principal, Navigator
Strategic and Crisis Communications
pfavre@navltd.com

Josh Greenberg
https://carleton.ca/sjc/profile/greenberg-josh/
Professor & Director, School of Journalism and Communication
Program Head, Communication Studies
Carleton University
Joshua.Greenberg@carleton.ca

Scott Knox
https://theica.ca/team
President & CEO, Institute for Canadian Agencies
Toronto, Ontario, Canada
scott@theica.ca

Ashley Mehlenbacher
https://uwaterloo.ca/scholar/arkelly
Associate Professor, Science, Health, and Technology Communication
University of Waterloo
ashley.mehlenbacher@uwaterloo.ca

Kevin Parent
Social Media Lead, Ottawa Public Health

Steward Reynolds (aka Brittlestar)
Communications expert, brand content creator, comedian
https://www.brittlestar.com
Stratford, Ontario, Canada
business@brittlestar.com

Robert Steiner
https://www.dlsph.utoronto.ca/journalism/profile/steiner-robert/
Director, Dalla Lana Fellowship in Journalism
Dalla Lana School of Public Health Sciences

University of Toronto, Ontario, Canada
robert.steiner@utoronto.ca

Gabby Stern
Director of Communications
World Health Organization
sterng@who.int

Heidi Tworek
https://www.heiditworek.com
Associate Professor, International History and Public Policy
University of British Columbia
Vancouver, British Columbia, Canada
heidi.tworek@ubc.ca

Appendix 2: Interview Guide

Key Informant Interview Questions
Re: most and least effective communications strategies

Date of interview:
Interviewer: Karen Palmer with Liz Bélanger Hardy
Interviewee(s):
Country of expertise:

About CanCOVID

- Thank the interviewee for meeting with us and do a quick round of introductions.
- Provide a brief overview of CanCOVID – something similar to the following:

CanCOVID was conceived in March 2020, in response to the COVID-19 pandemic. Mandated by the Government of Canada, our role is to enable science-to-policy action during the COVID-19 pandemic and post-pandemic future. We help connect people and resources to rapidly produce and disseminate credible knowledge to inform public health guidance. We encourage multidisciplinary collaborations to support Canada's scientific effort. Our work provides government partners with a better line of sight to existing and emerging COVID-19 science and research.

Consent

- The information that we gather from this meeting will be used in our report, with results reported anonymously.
- As we are consulting with experts around the world, and much of the information we gather will be in the form of 'expert opinion' we would like to include a list of those we have consulted with for this report, though we won't identify who said what. Would you like to be included in this list?
- With your permission, we would like to also record this session to ensure that we capture the key information from our conversation, and then delete the recording when we have completed our notes. Is this acceptable to you?

Question we are trying to answer:
Globally, what have been the most and least effective communications strategies and tactics used by public health and government to prevent and control community (i.e., non-hospital) infection during the COVID-19 pandemic, including uptake of testing, tracing, vaccination, masking, and air quality mitigation?
   a. What lessons have we learned about how to improve communications?

Questions for key informant:
1. What is your general impression of the effectiveness of public health and government communications throughout the pandemic?

2. What have local (e.g. provincial/territorial, state, cantonal) and national governments done well in terms of communications?

   - Who (which person, group, campaign) has executed highly impressive and relentlessly creative messaging strategies to respond to COVID-19?
      i. Specific examples of exemplary campaigns?

3. What have they done poorly?
   - Have mistakes in communications allowed COVID conspiracy theorists to gain traction?

  i. If yes, what have conspiracy theorists done well in terms of COVID communications that has allowed them to supposedly gain traction?

4. Do you think effectiveness in communications has varied over the different phases of the pandemic?
    - Have the tone and language of pandemic communications evolved over time? e.g. crisis communications initially vs. public health campaign communications later
    - Has effectiveness varied with different campaigns? e.g. testing/tracing/isolate vs. vaccination vs. masking vs. and air quality mitigation

5. To what extent have governments and government-affiliated public health teams worked with communications experts to hone messaging?
    - Are scientists and infectious disease physicians (such as Chief Medical Officers of Health – CMOH) best positioned to brief the public, or are communications or public health experts (or others) better positioned?
    - What role has scientific evidence about communications played?
        i. What knowledge gaps in communications science you would like to see filled?

6. What is the most effective way to build public trust in communications?
    - Who has done a good job of showing authenticity in communications?
    - Who has done a good job at transparent communications?
    - What is the best way to communicate unpredictability and avoid over-confidence and over-reassurance?

7. What do governments need to do now in terms of communications to help prevent and control infection?
    - Has there been sufficient local, national, and international coordination on pandemic communications?
    - How might we build capacity within government to improve public communications?

8. With so many different mainstream and social media outlets, what is the most effective way to reach the masses anymore?
    - Recognizing that "the public" is not monolithic, when is micro-targeting effective?
    - Has pandemic communications missed the mark on branding?

9. If you were in charge of pandemic communications, what would you do differently from what's being done now?
    - Do you have any thoughts on future directions for the role of communications? Where should communications sit within government?

10. Who was/is missing from the comms table and who should be there now?
    - e.g. sociologists, behavioural scientists, psychologists, anthropologists, geographers

11. Can you point to any key documents that identify best practices (available in English?) and/or published studies that could serve as useful reference material for this report?

Appendix 3: Search Strategy

Terms for Covid
"novel coronavirus" OR "coronavirus 2019" OR "COVID 2019" OR "COVID19" OR "COVID-19" OR "SARS-CoV-2" OR "HCoV-19" OR "2019-nCoV" OR "severe acute respiratory syndrome coronavirus 2"

Other search terms
Surveillance (i.e., PubMed (("sentinel surveillance" [MeSH Terms] OR "population surveillance" [MeSH Terms] OR "public health surveillance" [MeSH Terms] OR surveillance [Title/Abstract] OR "public health surveillance") AND OR "community-based surveillance" [TIAB] OR "participatory surveillance" [TIAB] OR "household surveillance" [TIAB] OR "community based sentinel surveillance" [TIAB] OR "community based health reporting" [TIAB]).

track*
monitor*
mask*
test*

vaccine* (vaccine * OR booster * OR inoculat * OR immune * OR immunization; hesitan * OR reluctan * OR refus * OR accept * OR anti-vaccin * OR anti-vax) PubMed: immunization" [tiab] OR "immunisation" [tiab] OR" vaccination" [tiab] OR
air quality
Communication*, health communication, information (also tried social media-(((TITLE-ABS-KEY ({social media} OR Instagram OR Facebook OR Twitter OR YouTube OR snapchat OR blog*[a] OR microblog* OR {online platform*} OR {social networking sites} OR sns OR {social network*} OR "SMI" OR linkedin OR influencer* OR web2.0)

Also tried
(trust OR trustworthiness) OR TITLE-ABS-KEY (credibility OR credible OR believab* OR integrity) OR TITLE-ABS-KEY (authentic OR authenticity OR genuineness OR legitima*))

Date Search Run	Database name & URL *Ex. ClinicalTrials.Gov & https://clinicaltrials.gov/*	# of items retrieved/ search results *Ex. Search Results:* 1) 181 2) 3	Comments
August 8	LitCovid & https://www.ncbi.nlm.nih.gov/research/coronavirus/	44428	

August 8	PubMed	1239	
August 8	Global Index Medicus	128	
August 8	CIHI- Covid collection	0	
August 8	Google Scholar	400	the eligibility of 400 studies were checked by analyzing the first 20 pages
August 9	Communication & Mass Media Complete (EBSCOHost), and Communication Abstracts (EBSCOHost),	481	
August 15	Google Scholar Search	First 100 pages	Various terms related to COVID AND Audience segmentation Microtargeting Misinformation Disinformation Crisis communication Digital communication Health communication Public health communication Risk communication Outbreak communication Target audience strategies Targeted messaging Targeted communication Public health messaging Social media strategy Media Mass media Personalized messaging Personalized risk communication Related terms Prebunking Debunking Uncertainty Trust transparency

Appendix 4: Summary of Lessons for Improving Communications during a Pandemic

Question	Lesson
Q1. What communications strategies and tactics have been the most effective during the pandemic?	• Holistic communications approaches were most effective when they combined facts with framing that was customized to specific audiences. • Effective communications put values before facts. • Trust is relational; communications contributed to building trust when they were authentic, empathic, frank, and creative. • Simple and clear messages were most effective. • Communications led by civil society were some of the most effective.
Q2. What government communications strategies and tactics have been the least effective during the pandemic?	• Lack of transparency—by not communicating the unvarnished truth—undermined public trust. • Command-and-control crisis communications cannot be sustained when a situation becomes chronic. • A word can mean different things to different people; language shapes change. • All science has uncertainty; nearly everyone did a poor job of communicating uncertainty. • Politicization of public health harmed the credibility of official communicators. • Canada's division of powers enabled disunited and conflicting communications that confused and alienated the public. • Poor communication about the regulatory process for vaccine approval eroded public trust.
Q3. What communications strategies enabled the COVID-19 infodemic and the spread of, dis-information, mal-information, mis-information?	• "Just trust us" is not an effective communication strategy. • Polarization in science communications calcifies everyone. • Uncertainty breeds misinformation; failure to effectively communicate about uncertainty helped fuel conspiratorial thinking and the infodemic. • Lack of timely official communications created a void that enabled conspiracy communicators.
Q4. What did conspiracy theorists do well in terms of COVID communications that allowed them to gain traction?	• Conspiracy communicators used persuasive, simple language; they "get" their audience. • Conspiracy theorists offered certainty where none existed.
Q5. Which communications strategies can help to combat disinformation and the COVID-19 infodemic?	• Providing better information—by explaining the evidence and reasoning that is guiding decisions—can counter misinformation and disinformation. • Social listening is an effective technique to track, analyze, and expose concerns, sentiments, rumours, and misinformation so that it can be quickly countered. • Explaining threats and offering hope is more effective than appealing to fear alone. • Prebunking—pre-emptive refutation—helps to inoculate against conspiratorial thinking better than debunking. • Radical transparency in communications builds trust and helps prevent conspiratorial thinking.

Q6. To what extent did governments and government-affiliated public health teams work with communications experts to hone messaging?	• Effective public science communications is a team sport requiring diverse expertise. • Communications scholars and experts outside government were rarely consulted or embedded. • The creative advertising industry as a whole could have helped with campaign messaging but was not at the table in Canada; elsewhere the industry was more engaged. • Tension between medical ethics and public health ethics complicated communications, raising questions about who is best suited to be a trusted public messenger.
Q7. What could governments do now in terms of communications to help prevent and control infection and enable our collective recovery?	• Canada would benefit from a national communications strategy for public health. • Communications needs to be radically transparent to rebuild trust in government. • Misinformation and disinformation must be swiftly countered. • Governments need to recognize that one size does not fit all when it comes to communications and must account for audience diversity. • Public communicators need to anticipate and prepare for the emergence of our collective grief and be mindful of that in messaging. • Establishing a truly independent public health agency at the federal/national level would enable better public health communications. • Communications, alone, cannot effect change going forward; governments need strong policy, regulations, and operational solutions to help normalize protective public health measures.