

# Health and Misinformation: Disentangling Truth and Falsehood

*A Science & Policy Exchange Public Forum*



**REPORT**

*Science & Policy Exchange (SPE)* is a student led non-profit organization that aims to assemble students and leaders in government, industry, research, and the community for an exchange of ideas on science and policy issues. To learn more, visit: <http://www.sp-exchange.ca>.

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## Acknowledgements

Science & Policy Exchange (SPE) is based in Tiohtiá:ke/Montreal, the traditional and unceded territory of the Kanien'keha:ka (Mohawk) - a place which has long served as a site of meeting and exchange amongst many First Nations including the Kanien'kehá:ka of the Haudenosaunee Confederacy (also referred to as the Iroquois or Six Nations Confederacy), Huron/Wendat, Abenaki, and Anishinaabeg. We further acknowledge the deep ties between colonialism and modern western science and research. At SPE, we strive to support indigenous students and researchers by actively reaching out to and working with the Indigenous STEM community to collaboratively advocate for their inclusion in evidence-informed decision-making.

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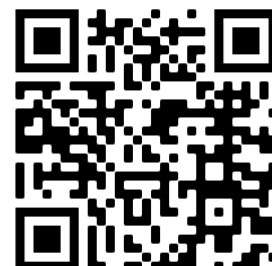


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A video recording of the forum can be found on the [Science & Policy Exchange YouTube channel](#), and can be accessed directly with the QR code to the right.



## Executive Summary

The internet and social media have increased the accessibility of health information but have also fostered the spread of potentially damaging health misinformation online, associated with risks at the personal and societal level. For individuals, it can be difficult to access accurate information, even when there is a genuine interest to do so. In addition, underdeveloped health literacy skills can impede the ability of individuals to assess the quality of information when it is found. The tendency of inaccurate - but emotionally impactful - information to viralize and reach wide audiences in short periods of time constitutes an additional risk for the spread of misinformation. At a societal level, misinformation can undermine public health initiatives, polarize public opinion, and reduce social cohesion. The present report summarizes an effort to better understand how and why misinformation spreads, and what can be done to promote access to accurate information and combat misinformation. Specifically, through the organization of a public forum with experts in science communication and information literacy applied to health contexts, we addressed the topic of misinformation by reviewing the factors that play a role in spreading it, contrasting the effectiveness of different approaches to promote access to accurate and reliable information, and delineating relevant recommendations and strategies that can potentially be useful from a public policy perspective.

## Background

### *Definition and Background*

**Health misinformation** is defined as “any health-related claim of fact that is false based on current scientific consensus” (Chou et al, 2020). The COVID-19 pandemic has highlighted the extent to which health misinformation impacts today's society. Increasingly, health information is becoming readily available online. Beyond this, the pandemic has also created an infodemic, where an excess of true and untrue information has made it difficult for people to find or distinguish reliable health information (World Health Organization, 2020). In fact, 96% of Canadians saw suspected COVID-19 misinformation online during the early months of the pandemic (Statistics Canada, 2021). The spread of misinformation costs lives by undermining public health initiatives designed to limit disease spread, such as mask mandates, quarantines, and vaccine campaigns. Furthermore, misinformation can polarize public opinion, causing increases in hate speech and risk of conflict and reducing social cohesion (Spring, 2020).

Though important, combating misinformation is not easy. Brandolini's law suggests that the energy necessary for refuting misinformation is an order of magnitude bigger than that needed to produce it (Williamson, 2016). It is not feasible for science communicators to find and shut down the primary sources of misinformation. Instead, it is more practical to target the uptake and spread (i.e., the secondary sources) of misinformation.

### *Motivation for Organizing the Forum*

Science & Policy Exchange has a proven record for providing a platform to promote meaningful discourse between stakeholders on a broad spectrum of science policy issues. In this occasion, as part of the project “*Innovative healthcare for an older Canada: a public forum series on the science and policy of healthy aging*”, supported by a Planning & Dissemination Grant from the Canadian Institutes of Health Research (CIHR), we addressed the topic of Misinformation in health contexts, whose relevance has been brought to the forefront in society as a result of the COVID-19 pandemic.

The topic of misinformation, however, is not new. It has been relevant and important before the COVID-19 crisis, and it will continue to be in the years to come. With the increased use of the internet and social media, and because of its accessibility and immediacy to consume and share information, the risk of exposure to inaccurate information increases. This is particularly risky for individuals who may lack adequate information literacy skills, which allow for critical assessment of the veracity of information. An additional risk is the tendency of emotionally impactful misinformation to viralize and reach wide audiences in short periods of time. This calls for organized efforts to understand better how misinformation spreads, why it can be appealing, and what approaches can promote access to higher-quality, accurate information. Particularly when it relates to critical areas of life, such as health, which ultimately can impact public health and society at large.

To address these topics, *Science & Policy Exchange* held a public forum involving experts in science communication and information literacy applied to health-related contexts.

## *Panelist Biographies*

**Olivier Bernard** is a science communication expert and speaks frequently about fighting health misinformation. Olivier completed his B.Pharm. and M.Sc. in pharmacogenetics at Université Laval and currently works as a pharmacist and science communicator.

**Vera Granikov** is a PhD candidate at the School of Information Studies at McGill University, exploring the role of collaboration in keeping up to date with the latest information. Vera is also a Research-Embedded Information Specialist and a Research Coordinator with the Quebec-SPOR SUPPORT Unit at the Department of Family Medicine (McGill University). She completed her Master of Library and Information Science in knowledge management and her B.A. in English at McGill University.

**Fatima Tokhmafshan** is a geneticist at the Research Institute of the McGill University Health Centre, specializing in child health. Fatima completed her B.Sc. in Biology at York University and her M.Sc. in Human Genetics at McGill University. She is the communications and research lead for COVID-19 Resources Canada, and member of the steering committee for ScienceUpFirst Initiative.

## *Moderator Biography*

**Alexandra Gellé** is a Ph.D. researcher at McGill University in the department of Chemistry. She obtained her B.Sc. from Université de Montréal. Alexandra is also involved in science communication as the president of Pint of Science Canada.

## The Roots of Health Misinformation

The panelists highlighted many factors that cause and reinforce the uptake of misinformation. Understanding these factors is integral to combating misinformation for individuals, science communicators, and organizations.

### *Misconceptions of the Uptake of Health Misinformation*

According to Oliver Bernard, the persistence of the knowledge deficit model in science communication undermines efforts to tackle misinformation. The knowledge deficit model assumes that public ignorance and mistrust in science is from a lack of knowledge and can be remedied by providing more information. However, this model assumes that individuals interpret information rationally and objectively, which is often not the case. Empirical research has shown that public communication of science is much more complex (e.g., Davies, 2008; Sturgis & Allum, 2004; Yeo et al., 2015). Individuals often process information using motivated reasoning instead of rational thought; in other words, we do not look for accurate answers, but instead look for answers that conform to our beliefs. For example, political belief, rather than knowledge, is the biggest predictor of climate change denial (Pew Research Center, 2016). When science communicators rely solely on the knowledge deficit model, they fail to recognize that most scientific debates are emotional rather than rational, requiring different communication strategies. Despite its flaws, the knowledge deficit model is persistent due to a lack of public communication training for scientists, institutional structures, and the simplicity of the model for policy design (Sims et al., 2016). A shift away from the knowledge deficit model is needed to combat misinformation and improve health literacy.

### *Health Literacy*

Panelists Fatima Tokhmashan and Vera Granikov emphasized the importance of health literacy in identifying and combating misinformation. In formal terms, health literacy can be defined as “the ability to access, comprehend, evaluate and communicate information as a way to promote, maintain and improve health in a variety of settings across the life-course” (Zumbo et al, 2006). In other words, misinformation cannot be countered by simply providing people with more information; individuals must also be empowered with the required critical thinking and analysis skills to understand and evaluate the new information so that they can identify both reliable information and misinformation. Health literacy has become increasingly important in the context of the COVID-19 health crisis, required to navigate the so-called infodemic of misinformation that has accompanied the pandemic.

Health literacy is currently a challenge for many Canadians: approximately 60% of adult Canadians are unable to obtain, understand, and act upon health information (Murray et al., 2008). Across the country, there is regional variance in health literacy levels, linked to the demographics of the various provinces and territories and the resources that are available to their populations. For example, digital inequity in remote regions such as Nunavut may have a negative impact on health literacy. Health literacy is also approximately 20% lower in Canadian immigrants, potentially linked to systemic language and culture barriers and discrimination (Ng & Omariba, 2014).

While health literacy does tend to improve with increasing formal education (Rootman & Gordon-EI-Bihbety, 2008), it is also important to note that not all scientists have health literacy and science communication skills. While scientists may be highly skilled at performing research and understanding information within their own field, they may not be able to accurately and effectively communicate scientific information, particularly from other scientific fields, to the general public, creating another potential source of unintentional misinformation.

In addition to their utility in identifying misinformation, healthy literacy strategies have the potential to effectively combat misinformation. Fatima Tokhmashan particularly emphasized the importance of making finding credible sources of information easy and communicating scientific information in a way that promotes an understanding of the process of science, including the uncertainty that inherently accompanies it. Mobilizing the public health majority, including grassroots initiatives, is also key in countering online misinformation, with a focus on inclusive initiatives through the alignment of culture, context, and identity. Other relevant strategies include inducing skepticism towards agents of misinformation; partnering with influencers and public figures to promote reliable information and combat conspiracy theories; and proactively monitoring, flagging, downranking, and removing content or accounts to promote misinformation.

### *The Spread of Online Misinformation on Social Media Platforms*

Vera Granikov strives to better understand how people use the information that they are given and how trustworthy information is disseminated. She discussed how citizens need to be better prepared to sift through information and be able to distinguish between trustworthy information and misinformation. The COVID-19 pandemic highlighted the complexity of health information and how society is not well equipped to deal with the overload of information from scientific communities. Information is changing quickly, is hard to understand, and is sometimes incorrect, which is harmful.

***“Misinformation seems to be airborne and, like a mask, we need to filter what information we consume and share.”***

Vera’s research team studies individuals’ experiences with online health information and has developed websites, such as Online Health Information Aid & Understanding Research, that teach people to critically search information online and critically think about the information that they consume. These websites also try to explain the process of science and health research, explaining what the scientific method is in easy to understand language.

Vera also highlighted the importance of pausing and questioning online information before we share it with our social networks. This pause gives time to digest and reflect to understand how accurate the information is and if it should be shared. The University of Regina published a study describing the concept of a “nudge” to prompt this type of reflection (Pennycook et al., 2020). This study explains that people want to share accurate information, but don’t often think about accuracy at the moment of sharing. However, when they were nudged with a questionnaire asking about the accuracy of the information, the quality of information dissemination improved.

Oliver Bernard also pointed out that the current design of social networks contributes to the spread of misinformation. Social networks are for-profit companies and thus are motivated to maximize engagement and use. Content that sparks intense emotional responses, such as fear and outrage, are more likely to go viral (Susarla, 2020). Therefore, to maximize user engagement, social media algorithms are more likely to promote sensational content. Thus, the spread of misinformation is accelerated by social media algorithms. A lack of regulation of social media editorial guidelines and algorithms allows this problem to persist.



## Recommendations and Strategies

### *Identifying Misinformation*

The panelists emphasized the importance of critically evaluating online health information, and the credibility of its source, especially before sharing it with your networks.

Vera Granikov recommended relying on known, trustworthy sources when searching for health information, and furthermore, suggests checking a “triangle” of three credible sources to verify if the information they provide agrees with one another. She also recommends using the 5Ws – who, what, when, where, and why – to thoroughly evaluate online misinformation.

Individuals can also make use of a variety of online resources to help them identify misinformation. We’ve compiled a non-exhaustive list of these resources in the next section of this report.

### *Combating Misinformation*

#### **Recommendations for Science Communicators:**

Misinformation is difficult to tackle due to Brandolini's law, the idea that the amount of energy required to refute misinformation is an order of magnitude larger than that required to produce it. Given this challenge, Oliver Bernard first recommends that everyone approach science communication and scientific discussion with empathy. Communicators need to try new communication approaches, as top-down communication strategies are not effective for combatting rampant misinformation. Instead, expert communicators need to listen to their audiences and be empathetic and considerate of their fears and motivations.

#### **Recommendations for Education and Research:**

In terms of long-term approaches, Oliver Bernard recommends improving education. Children should be taught health literacy and critical thinking skills so they are better able to evaluate information rationally, making them less susceptible to misinformation. At the same time, scientists should be better trained for communication, which should be accompanied by more research into effective communication strategies.

Olivier also suggested that policymakers should fund research focused on understanding and tracking misinformation (e.g., how misinformation propagates online and elsewhere), as well as research on effective communication strategies to fight misinformation. It is critical to identify what forms of communication work best for the public in terms of public awareness campaigns. In January 2019, the Canadian government initiated a relevant campaign to combat election misinformation. This included \$7 million to projects aimed at increasing public awareness regarding online misinformation. Programs such as these could be expanded and improved with more targeted and effective communication strategies.

## **Recommendations for Social Media Regulation:**

Olivier Bernard suggested that the regulation of social networks and social media content should be mandated. He argues that social media platforms have been allowed to regulate themselves, setting their own editorial guidelines. Panelist Fatima Tokhmafshan highlighted the importance of targeting social media in particular, as a recent survey by the World Health Organization (WHO) found that people aged 18-40 are more likely to receive and share scientific content on social media than anywhere else (World Health Organization, 2021). Some countries have already enacted legislation to regulate online content, such as the German Network Enforcement Act. Although concerns regarding censorship are often raised, Olivier asserts it's not restricting free speech. Rather, we need to draw a line and restrict certain misinformation that is a danger to society.

## Resources

*More information on health literacy and efforts to combat misinformation*

**#ScienceUpFirst-Together Against Misinformation in Canada** - this is a social media movement developed by a team of independent scientists, health care providers and science communicators to stop the spread of misinformation around COVID-19.

<https://www.scienceupfirst.com/>

**A Vision for a Health Literate Canada: Report of the Expert Panel on Health Literacy** - The Expert Panel on Health Literacy initiative is led by the Canadian Public Health Association. This particular report describes the scope of health literacy in Canada, barriers to proper information, and current interventions.

[https://www.cpha.ca/sites/default/files/uploads/resources/healthlit/report\\_e.pdf](https://www.cpha.ca/sites/default/files/uploads/resources/healthlit/report_e.pdf)

**Centers for Disease Control and Prevention - Health Literacy** - This site is for health communicators, public health professionals, and community leaders who seek information and tools on health literacy research, practice, and evaluation. In addition, information on health literacy efforts around the United States are available for observation.

<https://www.cdc.gov/healthliteracy/>

**Vaccine Misinformation Field Guide - Unicef, First Draft, Yale Institute for Global Health, and PGP (The Public Good Projects)** - The Vaccine Misinformation Management Field Guide was created through partnerships between Unicef, First Draft, Yale Institute for Global Health, and PGP (The Public Good Projects). This guide was developed for organizations looking to address the global infodemic through strategic and well-coordinated national efforts that seek to counter vaccine misinformation and build demand for vaccination that are informed by social listening.

<https://vaccinemisinformation.guide/>

**MedlinePlus (from the US National Library of Medicine) - Evaluating Health Information** - This site provides guides and tutorials to aid the evaluation of whether or not health information is accurate. Articles and videos on various health literacy subjects can be found here for people of many different backgrounds.

<https://medlineplus.gov/evaluatinghealthinformation.html>

**Audio Resources to Counter Misinformation - UNESCO** - These audio messages from UNESCO were developed to counter misinformation that has become more prevalent during the pandemic. These resources can be freely used by radio stations from around the world. Messages are available in English, French, Spanish and Arabic and can be freely downloaded here.

<https://en.unesco.org/covid19/communicationinformationresponse/audioresources>

**Online Health Information Aid** - This site provides a tool to help with searching, evaluating, and using health information.

<https://www.healthsanteinfo.ca/>

**Understanding Research** - This platform can be used to improve understanding of research concepts among people of many different backgrounds.

<https://osf.io/p4bsy/>

**Evidence for Democracy - Misinformation in Canada; Research and Policy Options** - This report characterizes the research landscape in Canada and provides options for addressing misinformation.

<https://evidencefordemocracy.ca/en/research/reports/misinformation-canada-research-and-policy-options>

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## About the SPE Team

We appreciate the contribution of all the volunteers at *Science and Policy Exchange* who kindly spent time and effort to make this public forum possible. In alphabetical order:

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