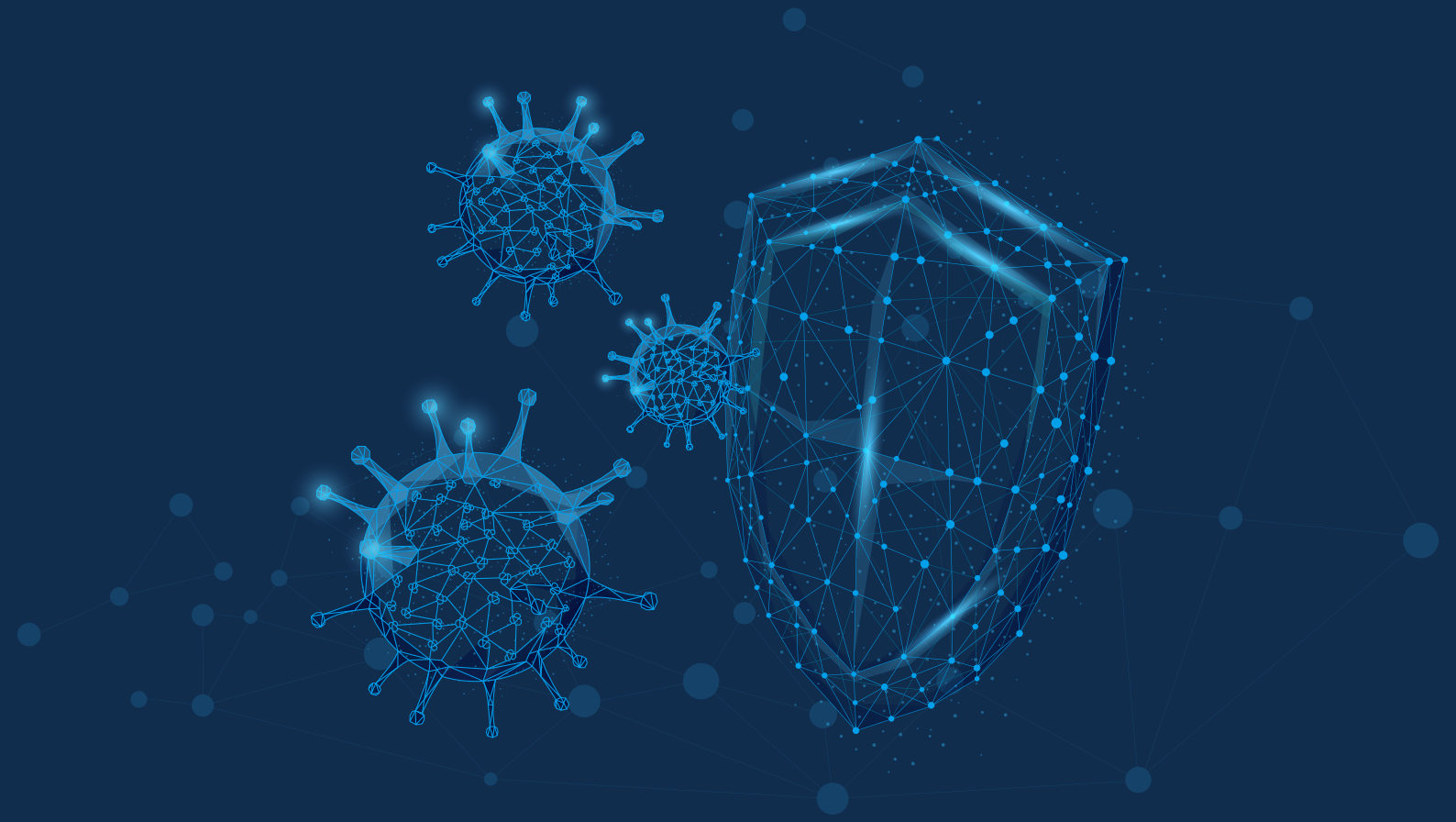
The COVID-19 Vaccine COMMUNICATION HANDBOOK

A practical guide for improving vaccine communication and fighting misinformation



This handbook is for journalists, doctors, nurses, policy makers, researchers, teachers, students, parents – in short, it's for everyone who wants to know more:

- about the COVID-19 vaccines,
- how to talk to others about them,
- how to challenge misinformation about the vaccines.

This handbook is self-contained but additionally provides access to a "wiki" of more detailed information.

Wherever you see this button  a click will take you to in-depth information that is updated by our team as new knowledge becomes available.

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The handbook has benefited from a number of detailed guides and documents created by and for organizations such as the WHO, UNICEF (e.g., Vaccine Misinformation Management Field Guide), the U.S. Food and Drug Administration, and the Royal Society.

They are available here: 

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Why vaccinations?

Vaccines help people survive. Vaccines save 5 lives every minute. The eradication of smallpox—a serious disease that left even survivors scarred for life—alone saves an estimated 5 million lives every year. If a vaccine had not eradicated smallpox, someone would now die from the disease every 6 seconds of every day. Prior to the introduction of a vaccine, as recently as 1980, measles caused more than 2.6 million deaths globally.

SUCCESS OF VACCINES

Vaccines can only save lives if people are vaccinated. Fortunately, most people get vaccinated. For example, 85% of children worldwide are vaccinated against diphtheria, tetanus, and pertussis (whooping cough), and in 125 countries that figure exceeds 90%.

The vast majority of people in most countries vaccinate their children, thereby making an important contribution to public health and people's lives.

Why COVID-19 vaccinations?

COVID-19 is a serious disease. In only 10 months the SARS-CoV-2 virus infected over 78 million people across the world, killing 1.7 million [1]. COVID-19 patients require intensive care in hospital at a rate more than 6 times greater than during the influenza pandemic in 2009 [2]. Many survivors are faced with sometimes severe long-term health impacts [3,4].

COVID-19 is not like the flu. It is more contagious, more deadly, and is spreading across a world where no-one was immune. [2]

FACTS ABOUT COVID-19

While behavioral measures such as isolating while symptomatic, mask-wearing and physical distancing have slowed the spread of the virus, vaccines provide a better path out of the COVID-19 pandemic, and scientists have now developed several highly effective vaccines against COVID-19.

BEHAVIORS TO CONTROL COVID-19

Because of the risk from COVID-19 and its prevalence, it was possible to expedite the clinical trials without compromising safety:

COVID-19 VACCINE DEVELOPMENT PROCESS

- Funding was no obstacle and thousands of scientists contributed to the effort.
- Many tens of thousands of people signed up rapidly to participate in COVID-19 vaccine trials in 2020, compared to the 12-18 months it often takes to recruit far fewer participants for such trials [5].
- These vaccines have been tested with more participants than many earlier vaccines for other diseases.
- Because of the high prevalence of COVID-19 in the population, observing the efficacy of the vaccines based on naturally-occurring infections was more rapid than it would be with other, rarer diseases.
- Pharmaceutical companies took financial risks and started investing in manufacturing early on, so there was no delay between completion of testing and rollout.

FACTS ABOUT COVID-19 VACCINES

As with all medicines, side effects can occur after getting a COVID-19 vaccine. However, these side effects are transient (24-48 hours), and serious side effects (allergic reactions) are exceedingly rare. The fact is: The risk of the disease by far outweighs the risks of the COVID-19 vaccines.

POTENTIAL SIDE-EFFECTS OF COVID-19 VACCINES

> ***A safe vaccine against COVID-19 protects us against a serious illness and is our ticket to freedom. We now have vaccines that have been tested on tens of thousands of people, and more than 10,000,000 people were already vaccinated by the end of 2020. The risk of COVID-19 far outweighs the risks of the vaccine.***

Studies in several countries have shown that most of the public recognize the importance of the COVID-19 vaccine and are keen to be vaccinated. For example, in a U.K. sample of more than 5,000 respondents, 72% were willing to be vaccinated in October 2020 [6]. In Finland, up to 75% of respondents were willing to be vaccinated [7]. In Australia, the rate was 86% [8], and similarly high levels have been found in Malaysia [9]. In the United States the rate was 66% in a national sample of 19,058 respondents in August 2020. Because attitudes can shift, we keep an inventory of public opinion in the wiki.

PUBLIC ATTITUDES TOWARDS COVID-19 VACCINE

> ***Trust in scientists increases:***
>
> ***Surveys in several countries have shown trust in scientists to increase. In Germany, the share of people who completely trust scientists doubled between 2019 and November 2020, and around 70% of the public trust scientists. In the U.K., 64% of respondents indicated in April 2020 that the pandemic had made them more likely to listen to scientists and researchers.***
>
> **TRUST IN SCIENTISTS**

What facilitates vaccine uptake?

Although most people and their children get vaccinated against common diseases, there is variability between countries, cultures, demographic, and ethnic groups.

CULTURAL DIFFERENCES IN VACCINE ACCEPTANCE

People are more likely to vaccinate when [10]:

- It is convenient, free, and easy.
- They have confidence in the safety of the vaccine and trust the system that delivers it [11].
- Their healthcare professionals recommend it.

IMPORTANCE OF HEALTHCARE PROFESSIONALS

- Role models, friends and family, or others "like them" have already been vaccinated [12].
- People are reminded that their actions can foster community immunity and help others [13].
- People recognize the risk from the disease, and understand vaccination is an effective solution to that risk [14].

Some countries also have mandates for certain vaccinations.

THE ROLE OF VACCINATION MANDATES

Thus, aspects related to thinking and feeling, social processes, and practical issues determine vaccine uptake. The same determinants have been identified for COVID-19 vaccines.

DETERMINANTS OF COVID-19 VACCINE UPTAKE

What variables increase hesitancy about COVID-19 vaccines?

Research has also considered the flipside, by examining the factors that may lead to hesitancy towards the COVID-19 vaccine.

- Some people oppose the vaccine for ideological reasons because COVID-19 and the response to it have become politicized in some countries. When this occurs, opposition is generally greater on the political right and among populists [15,16].

  POLITICS OF COVID-19 VACCINATION

- About a third of people who are not intending to be vaccinated against COVID-19 are committed vaccination opponents [16] and often believe in conspiracy theories.

  VACCINE DENIERS CONSPIRACY THEORIES

- Some people understand the need for a COVID-19 vaccine but have safety concerns.

  FACTS ABOUT COVID-19 VACCINES COVID-19 VACCINE DEVELOPMENT PROCESS

- People of color, immigrants, LGBTQ individuals, homeless or low-income people, people with disabilities and other marginalized populations traditionally face obstacles and inequalities in healthcare and this situation has been exacerbated by the COVID-19 pandemic. They may also have collective histories of experience with medical malpractice that affect current trust.

  CULTURAL DIFFERENCES IN VACCINE ACCEPTANCE

- Some people intend to become free-riders, letting others have the vaccine while they receive the benefits of herd immunity without getting the vaccine.

COVID-19: WHY FREERIDING MIGHT BE A DISASTROUS STRATEGY

- Some young and healthy individuals believe they are not at risk from COVID-19. Unfortunately this belief is misplaced, because even survivors of COVID-19 may suffer long-term health consequences [3,4].

I AM NOT IN DANGER OF COVID-19, OR AM I?

Fortunately, vaccine hesitancy does not necessarily lead to rejection of a vaccine [17], as many individuals who are skeptical about a vaccine nonetheless take it.

Setting the communication agenda for the COVID-19 vaccines

Several health organizations, such as UNICEF and the WHO (World Health Organization) have provided excellent detailed resources for positive communication.

FURTHER RESOURCES

Keep on Your Mask:

Despite the vaccine being rolled out now, health-protective behaviors remain critical for the foreseeable future. Even though the available COVID-19 vaccines are highly effective, the intensity of the pandemic (e.g., in the U.S.) means that it will take months before the impact of the vaccine fully kicks in [18].

So keep your mask on, practice hand hygiene, and maintain physical distance—if possible, stay home to stay safe.

BEHAVIORS TO CONTROL COVID-19

Communicating risk.

It is common for new vaccines to be met with initial hesitancy which later resolves as the program becomes established. Transparent and effective risk communication can assist with this process. Communicators must be aware of cultural and emotional differences but must also recognize that some people are adversarial or misinformed—we explain how to deal with misinformation and conspiracy theories below.

CULTURAL DIFFERENCES IN VACCINE ACCEPTANCE

Risk communication should acknowledge that the COVID-19 vaccines have transient but discomforting side effects such as fever and muscle pain [19]. Ironically, those side effects show that the vaccine is working because they prepare the body to fight the disease.

POTENTIAL SIDE-EFFECTS OF COVID-19 VACCINES

It is also crucial to prepare the public—and the media in particular—that "misattributed side effects" will occur, especially when lots of elderly people are getting vaccinated first [20]. For example, if we vaccinate 10 million people *and the vaccine had no side effects whatsoever*, then over the following two months we can nonetheless expect that:

- 4,025 of those vaccinated will have a heart attack.
- 3,975 will have a stroke.
- 9,500 will have a new diagnosis of cancer.
- 14,000 will, unfortunately, die. [21]

Life is risky, and some tragic events will happen after a vaccination, even when the vaccine has nothing to do with it. It is important not to jump to the conclusion that there is a connection between the vaccination and those events.

The only way to determine if vaccines have serious side effects is by scientific means, by looking at the data from many vaccinated people, and by comparing them to what would be expected in that age group by chance alone. When this is done, scientists find clear evidence that vaccinations do not cause the vast majority of the serious diseases and conditions that have been attributed to them in the media or by activists [22].

During the trial for one of the COVID-19 vaccines, involving nearly 40,000 participants, some side effects such as headaches and fatigue were more frequent in the vaccine group than the control group whereas others (such as diarrhea) were equal across groups [23].

Scientists will continue to monitor the COVID-19 vaccines meticulously to detect any potentially serious side effects that are biologically plausible. For example, the WHO has published a detailed manual about surveilling the safety of the COVID-19 vaccines: COVID-19 Vaccines: Safety Surveillance Manual. The Centers for Disease Control and Prevention in the U.S. maintains a real-time reporting system that can be interrogated for adverse effects: The Vaccine Adverse Event Reporting System (VAERS).

Engaging communities.

Community leaders can play a crucial role: Ingroup norms and habits have a big influence on group members, so mentioning positive norms towards vaccination by community leaders is helpful [24]. Community leaders should engage with empathy, transparency, and honesty to develop and maintain public trust and communicate effectively. A diversity of community groups should be included in engagement activities [25].

Let the public do the talking.

Getting the public involved in spreading the message can be helpful *(see box below)*. Social media can be an asset, too. YouTube has some excellent videos, for example: The Side Effects of Vaccines - How High is the Risk? and Inside the Lab That Invented the COVID-19 Vaccine.

F*ck It Won't Cut It:

Boston University successfully held classes on campus during the fall of 2020 in part because of an edgy, student-led campaign to enforce physical distancing and other health-protective behaviors. Called "F*ck It Won't Cut It," the campaign was created by students, for students. Although the university was already planning a campaign, students needed a voice they could trust: Generation Z is less likely to trust institutions and people in power and more likely to trust their peers.

Designed to remind students that saying "F*ck It" to small rules can lead to big consequences, the campaign aimed to modify the way students conducted themselves on and off campus, backed with factual statements that quoted reliable sources. A Bullsh*t Meter was used to debunk misinformation about COVID-19 and tips were offered on processing COVID-19 vaccine news. Across the semester, 2,063,415 users were reached via Instagram, Twitter, and TikTok. The campaign attracted the attention of the Centers for Disease Control and Prevention, and students presented their campaign to the CDC's COVID-19 Response Team.

How should healthcare professionals talk with people about the vaccines?

Healthcare professionals are the most trusted advisors and influencers of vaccination decisions [26], and the public generally also trusts public health bodies when it comes to COVID-19 vaccine information.

A recommendation from a healthcare provider is one of the strongest determinants of vaccine acceptance [10]. However, providers often underestimate the importance of their recommendations. A strong recommendation to get vaccinated, that assumes the person is willing to be vaccinated, has been shown to increase uptake [27,28]. For example:

- *'I can see that you need your COVID vaccine today'*
- *'You are due for your second COVID vaccine'*

Such announcements signal the healthcare professional's confidence in the vaccine and help establish vaccination as the norm. They are more effective at increasing uptake than more hesitant language (such as *'What do you think about getting the COVID vaccine today?'*) [27].

Where someone expresses hesitance or ambivalence after an announcement of vaccination, the healthcare professional should switch rapidly to acknowledging and empathizing with the person's concerns. The objective of any vaccination conversation should then be as much to build trust and rapport as to secure vaccination. Active listening fosters receptivity [26,29]. The table below shows how this can be done.

Traditional approach
(based on education and directing)

Healthcare professional (HCP): It's important to have your COVID-19 vaccine. If not, you're putting yourself and others in danger. ***[Confrontational, making client defensive.]*** Do you know there are still lots of cases of COVID-19 around and the illness can be very dangerous? Even if it doesn't kill you or land you in hospital, you can end up with long-term health problems if you catch it. You should get your vaccine as you are now due it according to the guidelines. We could do it now if you want. ***[One-way communication, no eliciting.]***

Client: I don't see the urgency. And the unknown effects of this new vaccine might be worse than COVID! I heard some people don't even know they've had COVID, or it's just like a flu. It's completely unbelievable to know that the vaccine is safe given it's been rushed out so quickly!

HCP: Studies have demonstrated no significant adverse effects. The vaccine is safe, I assure you. ***[Dismissive, not providing explanation of why we're confident the vaccine is safe.]*** You should be wary of the information that you could find on the Internet.

Client: I've heard something else and not only on the Internet. I've read a lot, and vaccination is not mandatory, I can do what I want.

HCP: Yes, you're right, it's not mandatory, but you're putting yourself and others in danger. The risks of COVID-19 are much higher than the risks of the vaccine. If I take this time to speak with you, it's because it's very important.

Client: But what if I have an adverse reaction? I would prefer to rely on my natural immune system if I can rather than put unknown chemicals in my body. I'm worried about the risks of this new vaccine that we don't fully understand and you don't seem to be interested in the possible implications for my future health.

HCP: Of course I am! And I'm worried about the fact that you could get COVID-19 when it could be prevented by this vaccine. ***[Fails to address client concerns about vaccine chemicals and other risks.]***

Client: I think we do not understand each other. Let's talk about this another time.

- Summary -

The healthcare professional adopted the role of the expert and used a directive intervention approach based on argumentation and righting reflex. This type of intervention led to resistance.

Active listening approach
(after presumption to vaccinate has not been successful)

HCP: What do you see as the advantages of having the COVID-19 vaccine? ***[Open-ended question.]***

Client: Well, I know that it's to protect against the virus and help us get back to normal. My dad received his, but I'm worried that it was rushed out too quickly and I can't be sure that it's safe. For other vaccines, I don't have the same doubts because they are more tried and tested, but this one makes me nervous.

HCP: As you said, it's to protect against the virus and to help us all get back to normal. If I understood you correctly, other vaccines seem safe to you, but you're a bit hesitant about this because it's new and was developed quickly. ***[Reflection, acknowledging concerns.]***

Client: Yes, I know it's good to protect against COVID and I do want to get back to normal but I'm conflicted. You know, I've read a lot of articles and online comments. Lots of people are worried about the vaccine being rushed out, and we just don't know the long-term effects and whether it's really safe.

HCP: So, you feel that it's important to protect yourself when the vaccines are safe, but you're worried about what you've read about possible unknown effects of the COVID-19 one. ***[Summarize position.]*** I hear that you've done a lot of research and thinking about the subject. ***[Affirmation]*** I have an information sheet here about studies on the safety of the vaccine. Shall we go through that briefly? ***[Elicit positive response.]***

Client: Sure! I want to know exactly what I'm risking.

HCP: Yes! You should definitely be aware of that. ***[Affirmation]*** In one trial alone, more than 40,000 people ***[Specific statistics are more credible.]*** took this vaccine under test conditions with very strict monitoring and follow-up over several months. Although many recipients reported mild reactions like pain at the injection site, tiredness and headache, only 4 people had more serious side effects. You might expect to have a sore arm and feel a bit off-color for a day. ***[Acknowledge side-effects but emphasise their mild nature.]*** But you will also have protection against COVID-19 and this means you can be more confident in going to the family event you mentioned. ***[Share]*** What do you think? ***[Elicit]***

Client: Well, it does help to know more about the safety checks.

HCP: You're right to want to keep yourself safe. ***[Affirmation]***

Client: Thank you for taking the time to understand my concerns. I think it's a bit clearer now.

HCP: I'm glad. There's a choice to be made here. I'd like to see you have the vaccine. Would you be willing to have it now?

- Summary -

Active listening allowed the client, in a non-judgmental way, to express concerns and ambivalence. Using an Elicit–Share–Elicit method allowed the healthcare professional to give solicited information that could be accepted by the client.

It should also be noted that healthcare professionals themselves may feel ambivalent or hesitant about vaccines [30]; this may need to be addressed in a separate intervention.

Addressing COVID-19 vaccine misinformation

Notwithstanding broad public acceptance of vaccinations, anti-vaccination activists have sought to undermine vaccinations since their invention more than 200 years ago. Although they rarely prevail, when anti-vaccination activists find temporary traction in a society, vaccination rates can decline, and preventable illnesses increase [31,32]. Anti-vaccination misinformation is characterized by reasoning flaws and fallacies [33,34,35] and, often, by belief in conspiracy theories [36,37].

COMMON ANTI-VACCINATION MISINFORMATION

During the COVID-19 pandemic, misinformation disseminated by an American cable TV channel was causally linked to increasing numbers of COVID-19 cases and deaths in the U.S. [38]. In the United Kingdom, the baseless conspiracy theory that blamed COVID-19 on the 5G mobile network engendered vandalism against telecommunications installations [39]. Numerous studies around the world have shown that belief in COVID-19 misinformation or conspiracy theories is associated with reduced intention to vaccinate [6,40,41,42,43].

FALLOUT FROM COVID-19 MISINFORMATION

It is therefore important to protect the public against anti-vaccination misinformation and propaganda.

Voices from the frontline:

Public-health professionals' experiences with anti-vaccination activist strategies [44]:

> ***"There might only be 20 people actually actively commenting, but they're just making lots and lots of comments."***
>
> ***"They feed people lies and try and convince people that not vaccinating is really, really safe."***
>
> ***"They will put up link after link after link after link after link after link so that you had to shut the conversation down."***

Here are some key steps to consider when confronted with misinformation:

1. Determining whether misinformation is gaining traction

Before spending time and resources on addressing specific misinformation, it's important to know whether it is really having an impact or is likely to have an impact. Remember that every time you address misinformation, you are talking about someone else's agenda not your own.

For policy makers it is particularly important to monitor media, and to know which media to monitor. There is evidence that reliance on social media for information about COVID-19 is associated with reduced health-protective behaviors and increased belief in conspiracy theories [45]. By contrast, reliance on broadcast media is associated with increased health-protective behaviors.

SUCCESSFUL STRATEGIC COMMUNICATION MEASURES

The health risks from social-media consumption are also manifest in other analyses. Greater prevalence of misinformation and conspiracy theories about the HPV vaccine on Twitter is associated with reduced vaccine uptake across U.S. states [46]. Similar effects have been found in a global analysis [47].

> ***The Platforms Can Help:***
>
> ***On December 10, 2020, Google launched a tool in its search feature to address misinformation about vaccinations and vaccine hesitancy claims, as well as where and how to get vaccinated in the United Kingdom.***

If misinformation demonstrably gains traction, then there are several possible responses.

2. Protecting against misinformation: "Prebunking" or inoculation

Because misinformation can spread fast and far [48], it's best if people are ready for it. This can be achieved by explaining misleading or manipulative argumentation strategies to people—a technique known as "inoculation" or "prebunking" that makes people resilient to subsequent manipulation attempts.

The process of inoculation includes a warning that people may be misled, followed by a preemptive refutation of the misleading argument. Inoculation thus follows the biomedical analogy [49]: By exposing people to a weakened dose of the techniques used in misinformation and pre-emptively refuting them, "cognitive antibodies" can be stimulated.

For example, one can explain to people how the tobacco industry rolled out "fake experts" in the 1960s to create a chimerical scientific "debate" about the harms from smoking. Doing so makes people more resistant to subsequent persuasion attempts using the same misleading argumentation technique, for example in the context of climate change [50].

The effectiveness of inoculation has been shown repeatedly and across many different topics [50,51,52]. During a mumps epidemic in Iowa in 2006, the Department of Public Health posted a primer, directed at the media, that anticipated and prebunked potential contrarian arguments [33]. This helped journalists resist being misled by bad argumentation.

The power of inoculation derives from understanding the general techniques of misinformation that are used to mislead the public [50,53]. A framework for the five techniques of science denial is known by the acronym FLICC [53,54,55]:

Examples of misleading FLICC arguments together with counterarguments to defang them are available on our wiki. This will be updated as misinformation emerges.

MYTHS ABOUT COVID-19 VACCINATION

Illustrating misleading techniques

Fake experts

People are more likely to rely upon and endorse ideas offered by expert sources [56]. However, people often lack the resources, knowledge, or time to resolve whether someone is an expert or not, affording "fake" experts (i.e., people who represent themselves as possessing relevant knowledge and expertise when they have none) the opportunity to mislead the public.

False balance

News sources can sow confusion and undermine scientific facts in an effort to provide "balanced" views. When a scientific issue is settled, presenting sources from "both sides" as if the scientific community were split on the issue, is misleading the public. Research shows that false-balance reporting can quickly erode public support for scientifically well-supported positions [57,58].

In the context of COVID-19, a political pressure group with a history of climate denial recently presented a "declaration" that dangerously proposed letting the pandemic run free to achieve "herd immunity" as a solution to the pandemic. This strategy was presented as an alternative scientific approach, despite being rejected as "scientifically and ethically problematic" by the WHO. In reality, the scientific consensus endorses mask wearing, physical distancing, and widespread administration of a COVID-19 vaccine as strategies to combat the pandemic [59].

A simple and helpful prevention measure is to forewarn people about the false-balance effect. This could be implemented in media libraries or on television before broadcasting potentially misleading debates [60]. Here is a hypothetical example:

In the following program, opposing standpoints may be presented equally, although there is only scientific evidence for one standpoint. Since journalists are anxious to report as fairly as possible, in some cases this so-called false balance occurs. By implementing false balance, journalists aim to equally weigh opposing perspectives on a topic. Thus, pro- and contra- arguments are presented to express different opinions. In debates about opinions, this serves to increase fairness and is widely regarded as good journalism.

However, this becomes problematic in science reporting – because science is about facts and not opinions. In most cases, an advocate for science is invited and, in addition, someone who represents an unscientific standpoint. This may make the debate more exciting, but it also creates the false impression that both positions are of equal value. The most common example is climate change: about 97 percent of scientists agree that climate change is caused by humans. However, people who deny human-caused climate change are still being invited on television. The scientific facts are distorted by these falsely balanced reports.

Impossible expectations

One misinformation strategy exploits the ambiguity of words that are understood differently by scientists and non-scientists. For example, to a scientist, "uncertainty" is a word used to quantify how precisely we know things (e.g., by providing confidence intervals around estimates). Knowing the uncertainty of estimates actually enables scientists to have greater confidence in the results of a vaccine test, for example. People who seek to discredit vaccines, however, often use uncertainty as a reason to dismiss solid knowledge.

More examples here: 

3. Correcting misinformation: How to debunk

If misinformation has already found traction, then your next option is debunking. Debunking can be challenging because even though corrections may seem to reduce people's beliefs in false information, the misinformation often continues to influence people's thinking [61].

Once experienced, even corrected misinformation can linger in memory but we can often undo its influence if we follow best practices.

The structure of an effective debunking involves the following components:

FACT	It is important to provide a factual alternative to the misinformation. If you have a clear, pithy, and sticky fact (e.g., "The vaccine is safe"), lead with it. It is also fine to lead with the warning/myth when the focus is on explaining why it is misleading. Avoid scientific jargon or complex, technical language [62]. Well-designed graphs, videos, photos, and other semantic aids can be helpful to convey corrections involving complex or statistical information clearly and concisely [63,64,65].
WARN ABOUT THE MYTH	Repeat the misinformation, only once, directly prior to the correction. One repetition of the myth is beneficial to belief updating because then people know what memory they should revise [66,67].
EXPLAIN FALLACY	Rather than only stating that the misinformation is false, provide details as to why. This is crucial. Explain (1) why the mistaken information was thought to be correct in the first place and (2) why it is now clear it is wrong and (3) why the alternative is correct [68,69]. It is important for people to see the inconsistency between misinformation and correct information in order to resolve it [67,70].
FACT	Finish by reinforcing the fact—multiple times if possible. Make sure it provides an alternative causal explanation whenever possible.

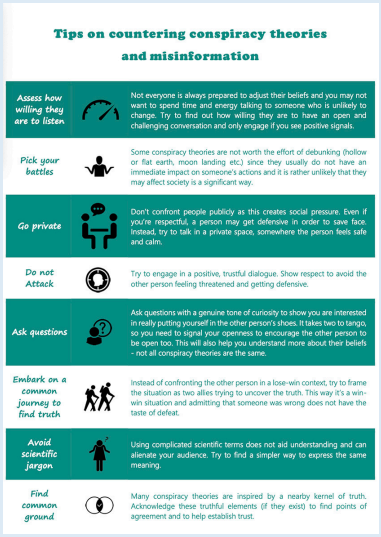
Social Media Messaging about COVID-19:

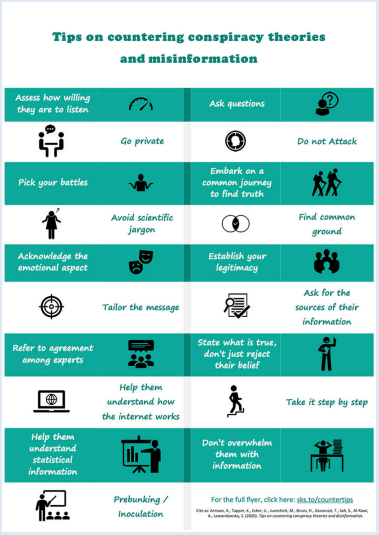
One study in Zimbabwe showed that targeting misinformation via WhatsApp has considerable promise. Exposure to corrective messages circulated via a newsletter significantly increased respondents' knowledge about the virus. The messages also reduced potentially harmful violations of social-distancing measures by 30% [71].

Debunking based on best-practice recommendations has been shown to be effective in combating vaccine related misinformation [72], notwithstanding the fact that vaccine misinformation might be expected to be resistant to corrections that may conflict with people's emotions and moral values [73]. Ideally, corrections of vaccine and COVID-19 misconceptions should be adapted to connect with the morality of recipients (e.g., do they value individual well-being or individual freedom more?) to mitigate negative emotional and cognitive reactions [73].

It can also be helpful to instruct people to attend to the source of the misinformation and its credibility [74].

Click on the thumbnails for two succinct guides about how to counter conspiracy theories and misinformation:





General vaccine myths [WHO, 2016]		
Fact	**Myth**	**Fallacy**
	SAFETY	
Many large studies have found that vaccines do not cause autism. The imaginary link between autism and vaccinations was based on fraudulent conduct [75]. Current research suggests that autism cannot be explained by a single cause, but is probably due to a combination of developmental, genetic, and environmental factors.	Children have developed autism after receiving the MMR vaccination.	**Correlation is not causation:** Just because two events happen close to each other in some cases doesn't mean one event caused the other.
Vaccines are generally a safe way to prevent vaccine-preventable diseases.	I am not against vaccination, but it needs to be 100% safe.	**Impossible expectations:** It is unrealistic to expect that any medical treatment is 100% free of side-effects.

Fact	Myth	Fallacy
EFFECTIVENESS		
Vaccines have shown to be effective in protecting people from vaccine-preventable diseases. SUCCESS OF VACCINES	My uncle got vaccinated and still developed the disease!	**Impossible expectations:** Vaccines aren't 100% effective, but they greatly reduce the likelihood of infection. **Anecdote:** Focuses on single cases while ignoring the larger picture of the vast majority of vaccinated people not getting infected.
THREAT OF DISEASE		
There is an overwhelming scientific consensus among medical experts that vaccines are the best way to fight preventable infectious diseases.	A group of experts who sell lots of books about the healing power of the human soul state there are no such things as diseases.	**Fake experts:** Relies on a small number of non-experts while ignoring the consensus of the expert community.
ALTERNATIVES		
Vaccines are one of the most important inventions in human history. They save more than 5 lives every minute.	Natural prevention is so much better than artificial inventions.	**Appeal to nature:** Just because something is natural doesn't make it good or effective, just as being 'unnatural' (e.g., scientifically developed medicine) doesn't make it bad.
TRUST		
Vaccine development is conducted by different pharmaceutical companies and independent research teams all over the world.	We know they are all systematically hiding the real data because we never see real data!	**Conspiracy theory:** Arguing that all the world's medical scientists are deceiving the public is an implausible conspiracy theory, given so many independent scientific teams find consistent results and check each others' work.

COMMON ANTI-VACCINATION MISINFORMATION

COVID-19 vaccine myths		
Fact	**Myth**	**Fallacy**
	SAFETY	
There is negligible risk of any vaccine giving you the disease—and in the case of COVID-19, none of the vaccines currently being rolled out use the live virus at all, not even in a weakened form.	The COVID-19 vaccine may give you COVID-19!	Misrepresentation: this myth is based on the misconception that the vaccines contain a live version of the virus.
Even though COVID-19 vaccine development was accelerated, vaccine testing was still required to proceed through a rigorous series of steps to establish the vaccines' safety and efficacy. The vaccines' safety will continue to be closely monitored as they are rolled out, to ensure they don't have serious side effects at unacceptable rates.	We can't know the COVID-19 vaccine is safe if it's only been around for a few months.	Impossible expectations: There are already many stringent tests to ensure the vaccines' safety. To delay vaccination means many more deaths due to COVID-19.
mRNA vaccines are synthetic and do not contain a weakened form of the actual virus. Instead, mRNA vaccines deliver instructions that allow your body to make a protective response. This is just as unlikely to change your genome as eating fish will make you grow gills.	mRNA vaccines change the human genome!	Misrepresentation: mRNA vaccines affect proteins specific to the virus and don't change human DNA.
Because of the risk from COVID-19 and its prevalence, the trials have proceeded faster than has been possible with other vaccines: Many tens of thousands of people signed up rapidly to participate in vaccine trials, compared to the more usual year or 18 months it takes to recruit a fraction of that for other vaccines.	COVID-19 vaccines were developed too fast. They simply cannot have a good safety profile.	Straw man: Paints a misleading picture of COVID-19 vaccine development which was so fast not because corners were cut but because so many resources were thrown at the problem.
The COVID-19 vaccines are highly effective but transient side effects such as headaches, pain at the injection site, or fatigue have been reported by a significant number of people.	The COVID-19 vaccine has terrible side effects.	Impossible expectations: The side effects of the vaccine pale in comparison to possible death from COVID-19.

COVID-19 VACCINE DEVELOPMENT PROCESS

COVID-19 VACCINE DEVELOPMENT PROCESS

POTENTIAL SIDE-EFFECTS OF COVID-19 VACCINES

Fact	Myth	Fallacy
	THREAT OF DISEASE	
COVID-19 is a highly infectious and deadly disease. By the end of 2020, it had caused over 1.7 million deaths globally. FACTS ABOUT COVID-19	COVID-19 is just another flu!	**Slothful induction:** Ignores that COVID-19 is far deadlier than the flu (e.g., by a factor of 3 among hospitalized patients overall and by a factor of 10 among adolescents [76]).
	TRUST	
Our understanding of COVID-19 is based on scientific research conducted by teams all over the world, as well as practical experience by the entire global medical community.	COVID-19 is a hoax.	**Conspiracy theory:** If COVID-19 were a hoax, it would have to involve millions of "insiders" who pretend to care for the ill and bury the deceased, or pretend to have lost loved ones. CONSPIRACY THEORIES
It is true that COVID-19 is more deadly in older people and those with underlying health problems. However, COVID-19 has caused many additional deaths beyond what would normally be expected in an average year.	Those dying of COVID-19 would have died of other causes anyway.	**Hasty generalization:** Assumes that because some older people die of other causes, they are all going to imminently die of other causes. **Slothful induction:** Younger people also die from COVID-19, and generally people suffer other long-term injuries from COVID-19 besides death.

More examples here: MYTHS ABOUT COVID-19 VACCINATION

Find out more about poor arguments and fallacies here: ARGUMENT QUALITY AND FALLACIES

4. Flattening the curve of the "infodemic": Nudging

If misinformation cannot be eliminated, the goal should be to "flatten the curve of the infodemic, so that bad information can't spread as far and as fast" [77]. Debunking and inoculation can help flatten the curve.

Another way to flatten the curve involves "nudges": Nudges are ways to alter the context in which decisions take place to improve the quality of those decisions. One approach involves subtly prompting people to consider accuracy before sharing content on social media—thereby increasing the salience of truth. This approach has been shown to increase the quality of news content that people intend to share on social media about COVID-19 [78].

NUDGING: FLATTENING THE CURVE OF THE INFODEMIC

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